

REPORT NO. 207-KAR-03-001

**SAFETY COMPLIANCE TESTING
FOR FMVSS 207**

SEATING SYSTEMS

2003 JEEP
GRAND CHEROKEE
5 DOOR SUV

NHTSA NO. C30306

PREPARED BY:
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AUGUST 4, 2003

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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SECTION 1
PURPOSE OF COMPLIANCE TEST

1. PURPOSE OF COMPLIANCE TEST

Tests were conducted on a 2003 Jeep Grand Cherokee SUV, manufactured by Chrysler Corporation, to determine compliance with FMVSS 207, "Seating Systems". The purpose of this standard is to reduce the number of deaths and injuries that may be caused by the failure of seats, their attachment hardware, and their installation when said failure results from the forces on the seat in a vehicle impact.

All tests were conducted based on the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, TP-207-09, dated June 18, 1992, and corresponding KARCO Engineering, LLC test procedure KTP-207, dated August 2, 2003. Detailed procedures for receiving, inspecting, testing and reporting of test results are described in the test procedures and are not repeated in this report.

This report is organized in sections containing pertinent test information and data tables as follows:

- Section 2 - Compliance Test Procedure and Data Summary
- Section 3 - Compliance Test Data
- Section 4 - Noncompliance Data (if applicable)
- Appendix A - Photographs
- Appendix B - Data Plots
- Appendix C - Test Equipment List and Calibration Information

SECTION 2
COMPLIANCE TEST PROCEDURE and DATA SUMMARY

2. COMPLIANCE TEST PROCEDURE AND DATA SUMMARY

A 2003 Jeep Grand Cherokee SUV was subjected to FMVSS 207 compliance testing on July 31 through August 4, 2003. All tests were conducted at KARCO Engineering, LLC in Adelanto, California. Summary data is shown on Data Sheet No. 2. The following tests were performed:

- Receiving inspection
- Aft moment tests on front seat backs
- Aft load tests on front seat frames and adjusters
- Forward load tests on front seat frames and adjusters
- Aft moment tests on rear seat backs
- Aft load tests on rear seat cushions and seat backs
- Forward load tests on rear seat cushions and seat backs

The tests were conducted per the FMVSS 207 test procedure. The significant aspects of the test procedure are described in the following paragraphs.

2.1 Test Vehicle Inspection. The test vehicle was inspected to verify that all seat, restraint systems and seat belt assembly anchorage systems are complete and the seat adjusting mechanisms are working properly.

2.2 Test Vehicle Preparation and Pre-test Measurements. The test vehicle was securely mounted to the test fixture and connected to the appropriate number of hydraulic actuators. Lateral spacing of the individual seat anchorages were measured and all other angular and dimensional measurements were verified to be in compliance with the requirements of the subject safety standards. The components were weighed and their centers of gravity determined.

2.3 Static Load Tests-General Performance Requirements.

When tested in accordance with S5, each occupant seat, other than a side-facing seat or a passenger seat on a bus, shall withstand the following forces:

- (a) In any position to which it can be adjusted -- 20 times the weight of the seat applied in a forward longitudinal direction;

(Continued on next page)

2.... (Continued)

- (b) In any position to which it can be adjusted — 20 times the weight of the seat applied in a rearward longitudinal direction;
- (c) For a seat belt assembly attached to the seat — the force specified in subparagraph (a), if it is a forward facing seat, or subparagraph (b), if it is a rearward facing seat, in each case applied simultaneously with the forces imposed on the seat by the seat belt assembly when it is loaded in accordance with section S4.2 of Federal Motor Vehicle Safety Standard No. 210; and
- (d) In its rearmost position — a force that produces a 3,300 inch-pound moment about the seating reference point (SRP) for each designated seating position (DSP) that the seat provides, applied to the upper cross-member of the seat back or the upper seat back, in a rearward longitudinal direction for forward-facing seats and in a forward longitudinal direction for rearward-facing seats.
- (e) To meet FMVSS 210 requirements, the anchorages, attachment hardware, and attachment bolts for all Type 2 and automatic seat belt assemblies that are installed to comply with Standard No. 208 (49 CFR 571.208) shall withstand 3,000 pound forces when tested in accordance with S5.2.

SECTION 3
COMPLIANCE TEST DATA

3. COMPLIANCE TEST DATA

The results of FMVSS 207 compliance tests that were conducted on the 2003 Jeep Grand Cherokee SUV on July 31 through August 4, 2003, to determine compliance with FMVSS 207, "Seating Systems" are presented in this section. No performance failures were identified for the vehicle tested.

DATA SHEET NO. 1
TEST VEHICLE RECEIVING INSPECTION

VEHICLE			
YEAR	2003	MAKE	JEEP
MODEL	GRAND CHEROKEE	BODY STYLE	SUV
NHTSA NO.	C30306	VIN	1J4GX48S23C541958
BUILD DATE	09/02	TEST DATE	07/31/03 - 08/04/03
TEST LABORATORY	KARCO ENGINEERING, L.L.C.		

1. First compliance test by laboratory for this vehicle is S207 test.

	Yes	☒ No (Go to item 2)
☒ 1.1	Label test vehicle with NHTSA Number	
☒ 1.2	Verify all options on the "window sticker" are present on the vehicle	
☒ 1.3	Verify tires and wheel rims are new and the same as listed	
☒ 1.4	Verify there are no dents or other interior or exterior flaws	
☒ 1.5	Verify the glove box contains an owner's manual, warranty document, consumer information, and extra keys	
☒ 1.6	Verify the vehicle is equipped with the proper fuel filler cap	
☒ 1.7	If the vehicle has been delivered from the dealer, verify the vehicle has been properly prepared and is in running condition	

2. Verify seat adjusters are working

☒ Yes ☐ No

3. Verify there is a seat belt at each seating position

☒ Yes ☐ No

4. Without disturbing the integrity of each seat belt and anchorage, verify that each seat belt is attached to the anchorage. For seat belts that are attached to the seat, also verify the seats are attached to the seat anchors and the seat anchors are attached to the vehicle.

☒ Yes ☐ No

RESULTS OR RECEIVING INSPECTION:

PASS -- ☒
 FAIL -- ☐
 CONDITIONAL -- ☐

REMARKS:

RECORDED BY: MARK A. KRATZKE DATE: 08/04/03
 APPROVED BY: MATTHEW A. IVORY DATE: 08/04/03

DATA SHEET NO. 2
SEATING SYSTEM TEST RESULTS

VEHICLE			
YEAR	2003	MAKE	JEEP
MODEL	GRAND CHEROKEE	BODY STYLE	SUV
NHTSA NO.	C30306	VIN	1J4GX48S23C541958
BUILD DATE	09/02	TEST DATE	07/31/03 - 08/04/03
TEST LABORATORY	KARCO ENGINEERING, L.L.C.		

LEGEND: Wa - Weight of Seat Assembly
 Wb - Weight of Seat Back
 Wc - Weight of Seat Cushion
 Z - Distance from Seat SRP to Uppermost Crossmember = 16.0 "

FOR FRONT BUCKET SEATS - - LEFT SIDE

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back	Forward	Wb = 18	20 x Wb = 360	N/A	N/A	N/A
Seat Assy.	Forward	Wa = 46	20 x Wa = 920	913.2	N/A	PASS
	Rearward	Wa = 46	20 x Wa = 920	907.2	N/A	PASS
Seat Back Moment	Rearward	N/A	3275 in-lb/Z	198.1	3189.8	PASS

FOR FRONT BUCKET SEATS - - RIGHT SIDE

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back	Forward	Wb = 16	20 x Wb = 320	N/A	N/A	N/A
Seat Assy.	Forward	Wa = 34	20 x Wa = 680	675.3	N/A	PASS
	Rearward	Wa = 34	20 x Wa = 680	675.5	N/A	PASS
Seat Back Moment	Rearward	N/A	3275 in-lb/Z	199.0	3184.0	PASS

(Continued on next page)

DATA SHEET NO. 2.... Continued

FOR FRONT BUCKET SEATS - - COMBINED

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	ATTACHMENT (PASS/FAIL)
Driver Lap Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Driver Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Center Lap Belt	Forward	N/A	5,000 lbs, -10, -50	N/A	N/A
Passenger Lap Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Passenger Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Driver Seat Assembly	Forward	W _a = N/A	20 x W _a = N/A	N/A	N/A
Passenger Seat Assembly	Forward	W _a = N/A	20 x W _a = N/A	N/A	N/A

LEGEND: W_a - Weight of Seat Assembly

W_b - Weight of Seat Back

W_c - Weight of Seat Cushion

Z - Distance from Seat SRP to Uppermost Crossmember = 16.0 "

FOR REAR SEATS - -

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Left Cushion	Forward	W _c = 8	20 x W _c = 160	159.5	N/A	PASS
Left Back	Forward	W _b = 18	20 x W _b = 360	357.6	N/A	PASS
Left Cushion	Rearward	W _c = 8	20 x W _c = 160	159.9	N/A	PASS
Left Back	Rearward	W _b = 18	20 x W _b = 360	353.4	N/A	PASS
Seat Back Moment	Rearward	N/A	3275 in-lb/Z	196.8	3148.8	PASS
Right Cushion	Forward	W _c = 10	20 x W _c = 200	196.7	N/A	PASS
Right Back	Forward	W _b = 26	20 x W _b = 520	515.4	N/A	PASS
Right Cushion	Rearward	W _c = 10	20 x W _c = 200	199.6	N/A	PASS
Right Back	Rearward	W _b = 26	20 x W _b = 520	519.7	N/A	PASS
Seat Back Moment	Rearward	N/A	3275 in-lb/Z	200.2	3203.2	PASS

(Continued on next page)

DATA SHEET NO. 2... Continued
FOR REAR SEATS - - COMBINED

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	ATTACHMENT (PASS/FAIL)
Left Lap Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Left Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Left Rear Seat Back	Forward	$W_a = \text{N/A}$	$20 \times W_a = \text{N/A}$	N/A	N/A
Center Lap Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Center Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Right Lap Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Right Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	N/A	N/A
Right Rear Seat Back	Forward	$W_a = \text{N/A}$	$20 \times W_a = \text{N/A}$	N/A	N/A

COMMENTS:

RECORDED BY: MARK A. KRATZKE

DATE: 08/04/03

APPROVED BY: MATTHEW A. IVORY

DATE: 08/04/03

DATA SHEET NO. 3
SEAT BACK ANGLES

VEHICLE			
YEAR	2003	MAKE	JEEP
MODEL	GRAND CHEROKEE	BODY STYLE	SUV
NHTSA NO.	C30306	VIN	1J4GX48523C541958
BUILD DATE	09/02	TEST DATE	07/31/03 – 08/04/03
TEST LABORATORY	KARCO ENGINEERING, L.L.C.		

LAP BELT ANCHORAGES:

SEAT	SEATING POSITION	SPECIFIED ANGLE RANGE ABOVE HORIZONTAL	MEASURED ANGLE		DOES BELT SECURELY FIT ON PELVIS?
			I/B	O/B	
FRONT	Left	30 to 75 degrees	N/A	N/A	N/A
	Center	30 to 75 degrees	N/A	N/A	N/A
	Right	30 to 75 degrees	N/A	N/A	N/A
REAR	Left	30 to 75 degrees	N/A	N/A	N/A
	Center	30 to 75 degrees	N/A	N/A	N/A
	Right	30 to 75 degrees	N/A	N/A	N/A

SHOULDER BELT ANCHORAGES:

SEAT	SEATING POSITION	SPECIFIED ANGLE RANGE ABOVE OR BELOW HORIZONTAL	MEASURED ANGLE
FRONT	Left	0 – 80 degrees above	N/A
		0 – 40 degrees below	N/A
	Right	0 – 80 degrees above	N/A
		0 – 40 degrees below	N/A
REAR	Left	0 – 80 degrees above	N/A
		0 – 40 degrees below	N/A
	Center	0 – 80 degrees above	N/A
		0 – 40 degrees below	N/A
	Right	0 – 80 degrees above	N/A
		0 – 40 degrees below	N/A

RECORDED BY: MARK A. KRATZKE DATE: 08/04/03

APPROVED BY: MATTHEW A. IVORY DATE: 08/04/03

DATA SHEET NO. 4**REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING**

The following vehicle has been subjected to compliance testing for FMVSS No. 207

VEHICLE			
NHTSA NO.	C30306	TEST DATE	08/01/03
CONTRACT NO.	DTNH22-01-C-31025	VIN	1J4GX48523C541953
SEAT CONFIGURATION			
VEHICLE OR SEAT MANUFACTURER		CHRYSLER CORPORATION	
TEST LABORATORY		KARCO ENGINEERING, L.L.C.	

The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager (NAD-30), with a copy to the OVSC COTR. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

TEST VEHICLE INFORMATION			
Manufacturer	Chrysler Corporation	VIN	1J4GX48523C541953
Manufacturing Date	09/02	Delivery Date	03/24/03
Dealer	SUNLAND JEEP	NHTSA No.	C30306
Odometer Reading (mi.)	7	Fuel Type	GAS
Engine Displacement	4.0 LITERS	Cylinders	6
Transmission	AUTOMATIC	Final Drive	REAR
Engine Placement	LONGITUDINAL	Color	BLUE
Tire Press./Max. Cap. Front	33 psi	Cold Tire Press.	33 psi
Tire Press./Max. Cap. Rear	33 psi	Cold Tire Press. Rear	33 psi
Recommend Tire Size	P225/75 R16	Type of Spare	P225/75 R16
Tire Size on Vehicle	P225/75 R16	Manufacturer	GOODYEAR
GVWR	5150 lbs.	Cargo Capacity	582 lbs.
GAWR Front	2500 lbs.	GAWR Rear	2950 lbs.
Air Conditioning	YES	Power Steering	YES
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	YES
Power Windows	NO	Tilt Steering	YES
Anti-lock Brakes (ABS)	YES	Power Seats	NO
Driver Airbag	YES	Passenger Airbag	YES

TEST VEHICLE ATTITUDE (mm)

ATTITUDE	LF	RF	LR	RR
As Delivered	850	853	836	835
As Tested	850	853	836	835

Test Vehicle Condition: **FRONT OF VEHICLE WAS REMOVED, SEATS WERE TESTED.**

RECORDED BY: **MARK A. KRATZKE**

DATE: **08/04/03**

APPROVED BY: **MATTHEW A. IVORY**

DATE: **08/04/03**

APPENDIX A
PHOTOGRAPHS

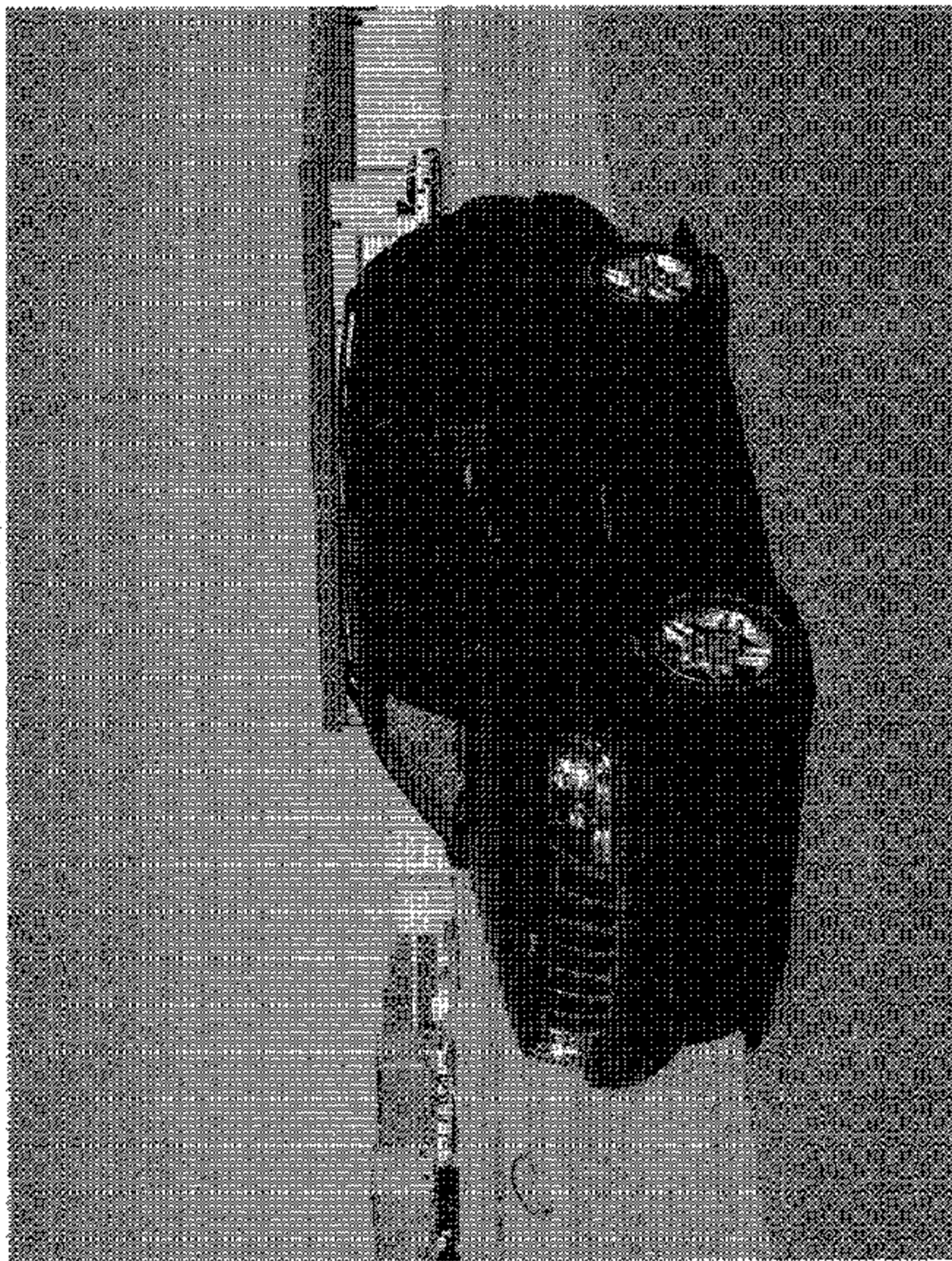


Figure A-1: Left Front (as Received)

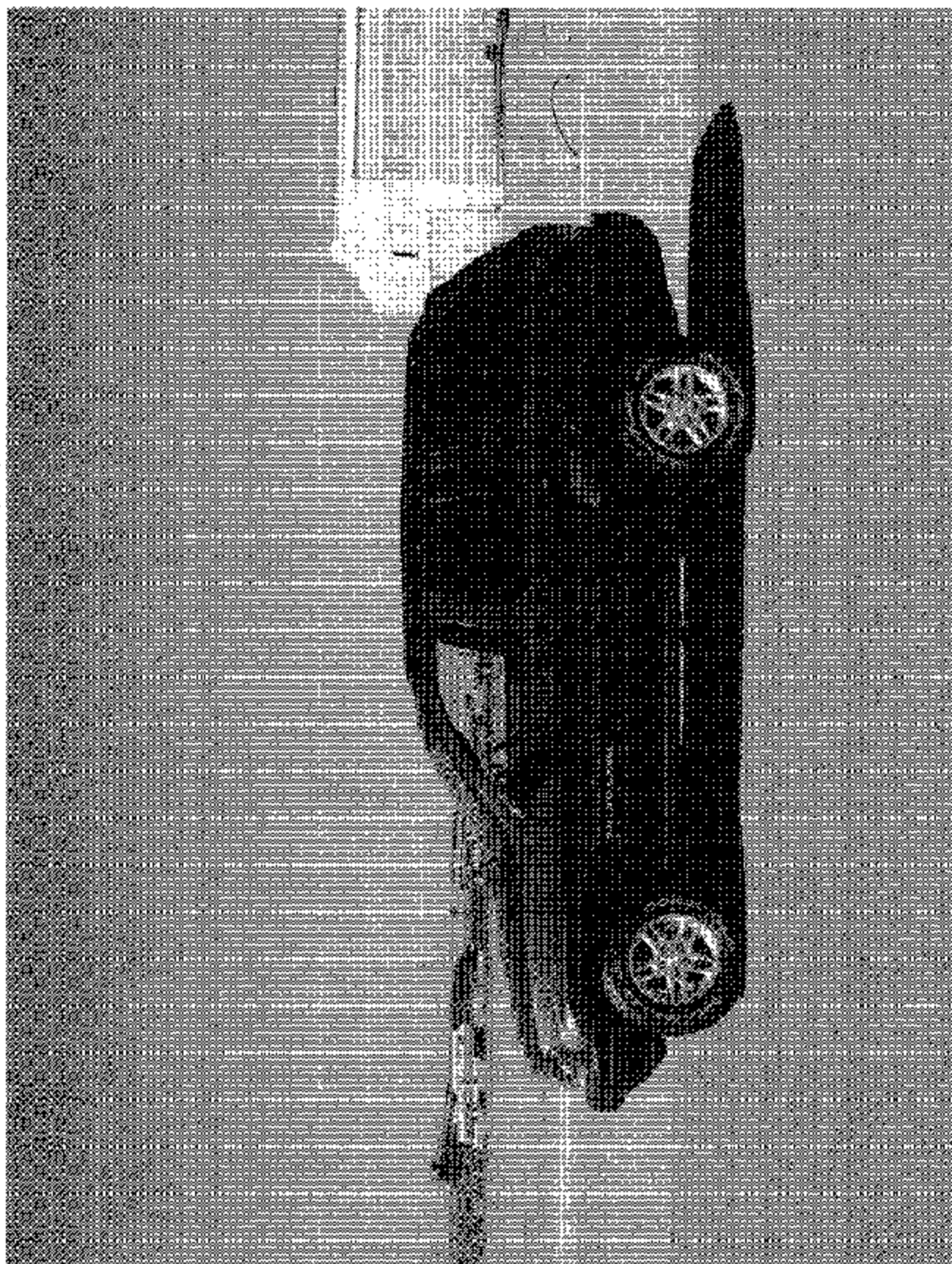


Figure A-2: Left Side (as Received)



Figure A-3: Right Rear (as Received)



Figure A-3: Right Rear (as Received)

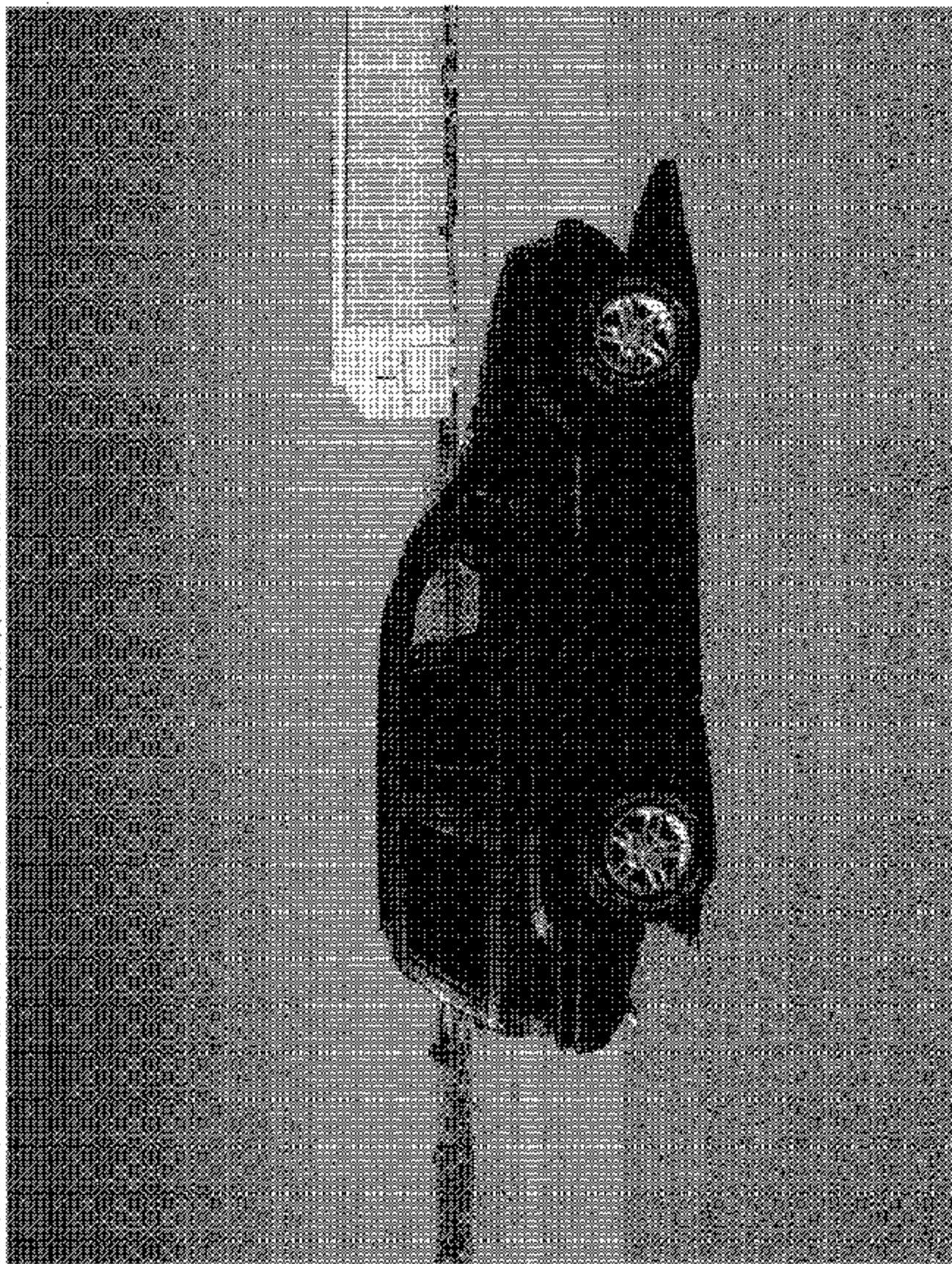
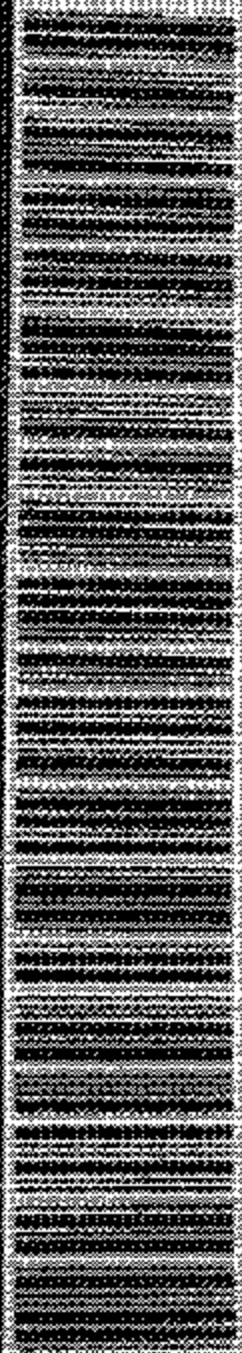


Figure A-4: Right Side (as Received)



THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND EMISSION PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 1J4GX48S2C0541958 TYPE: MPV NDI: 090522 41740

VEHICLE MADE IN U.S.A. PAINT: PRG

TRIM: E7LS

4646503

Figure A-5. Vehicle Certification Label

MADE BY DAIMLERCHRYSLER CORPORATION

DATE OF MFR: 9-82

2236 KG 85150 LB

GAUG FRONT: 1134 KG 15X7

2500 LB

P225/75R16

1125

GAUG REAR: 1339 KG 15X7

2950 LB

P225/75R16

1125

Figure A-6: Vehicle Tire Label

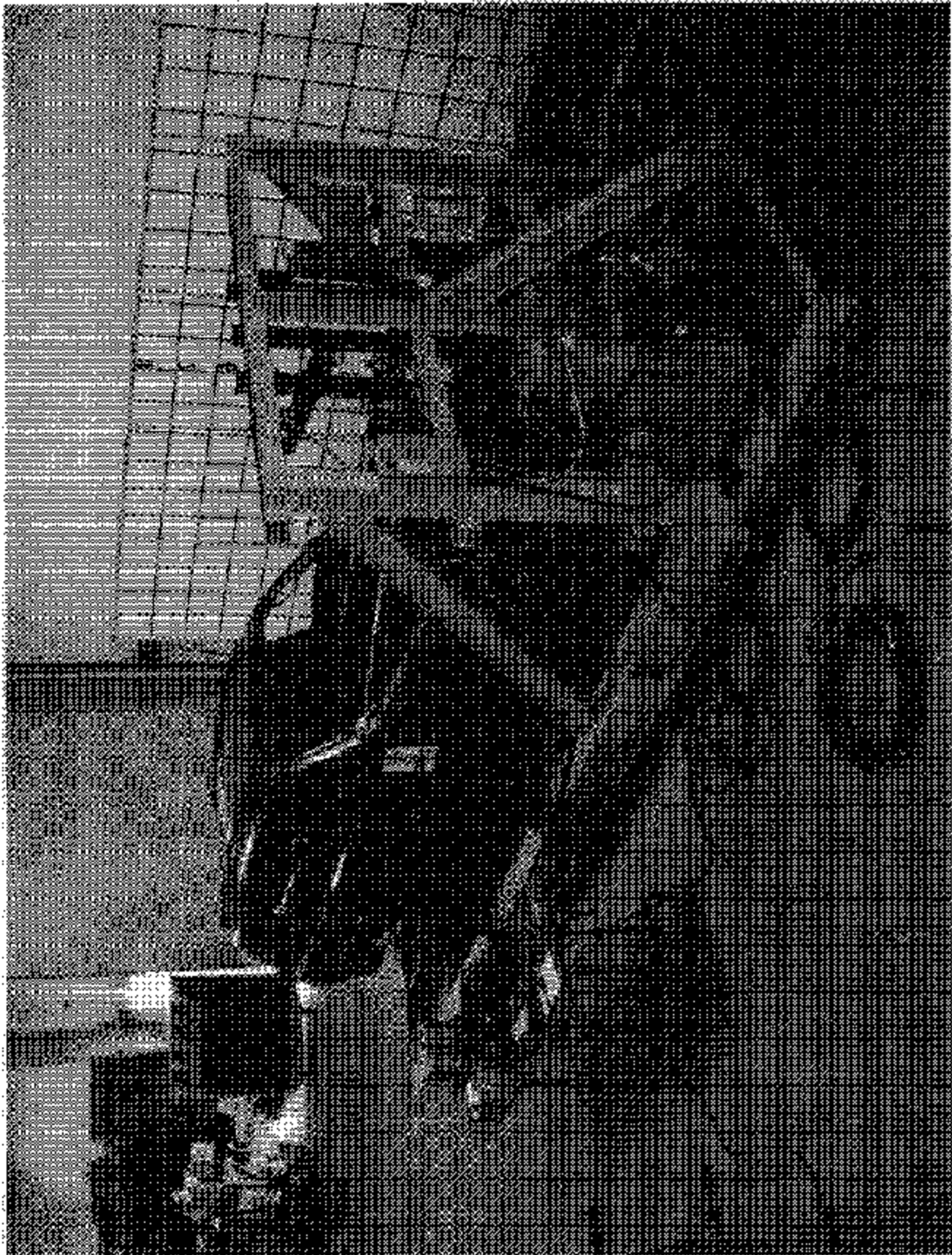


Figure A-7. Vehicle Mounted in Test Fixture

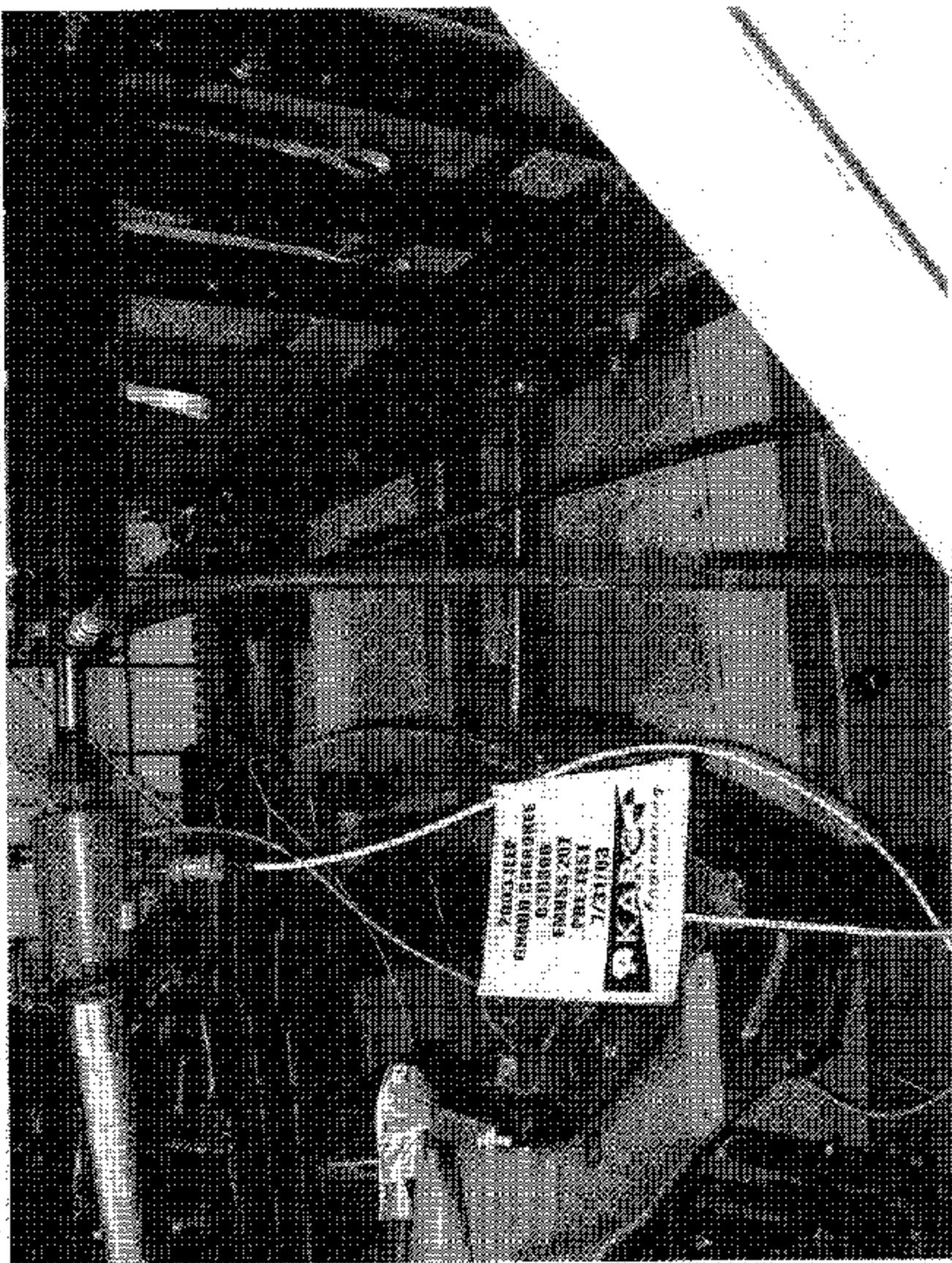


Figure A-8. Vehicle Mounted in Test Fixture



Figure A-8: Vehicle Mounted in Test Fixture

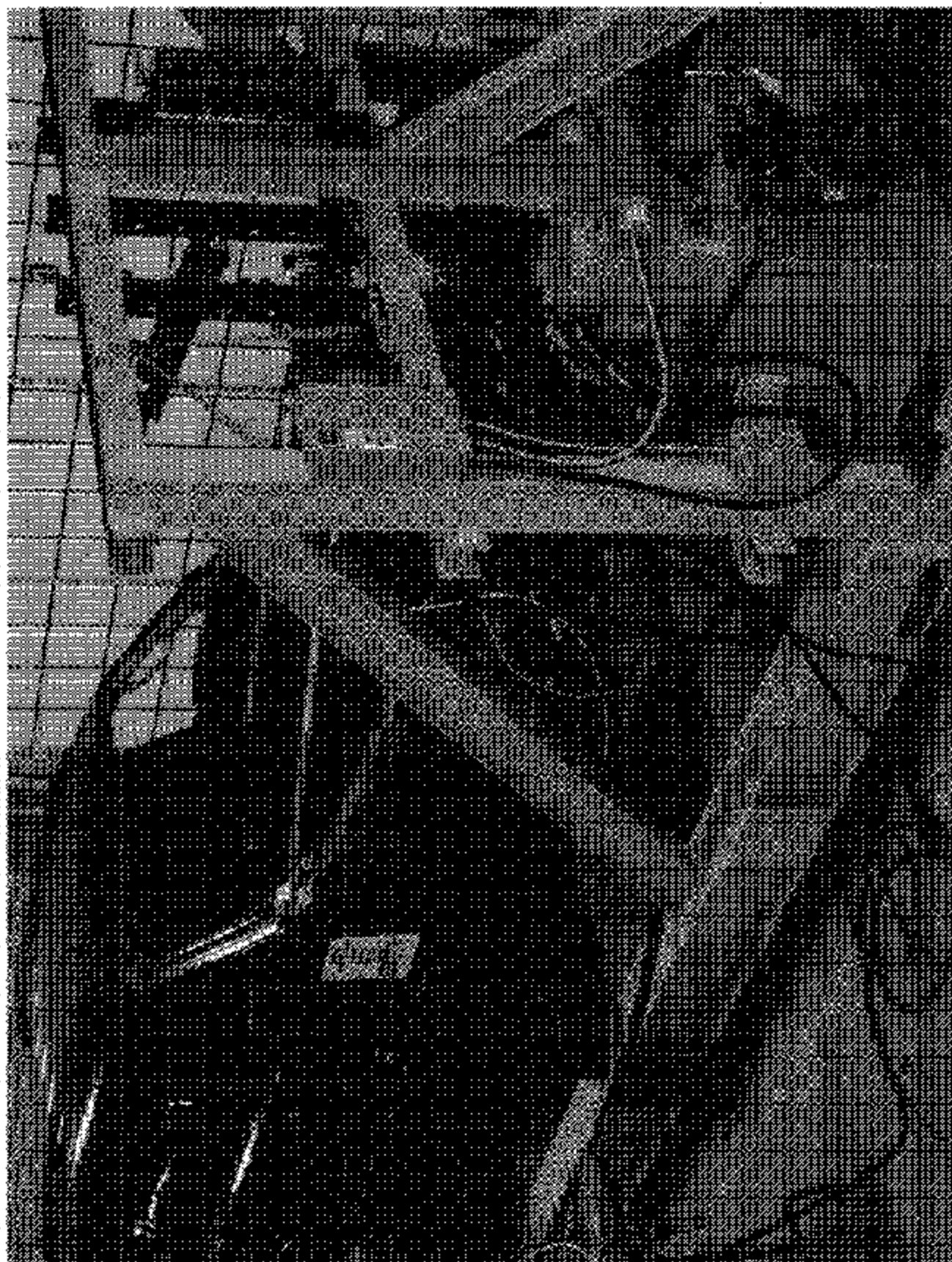


Figure A-10: Vehicle Mounted in Test Fixture

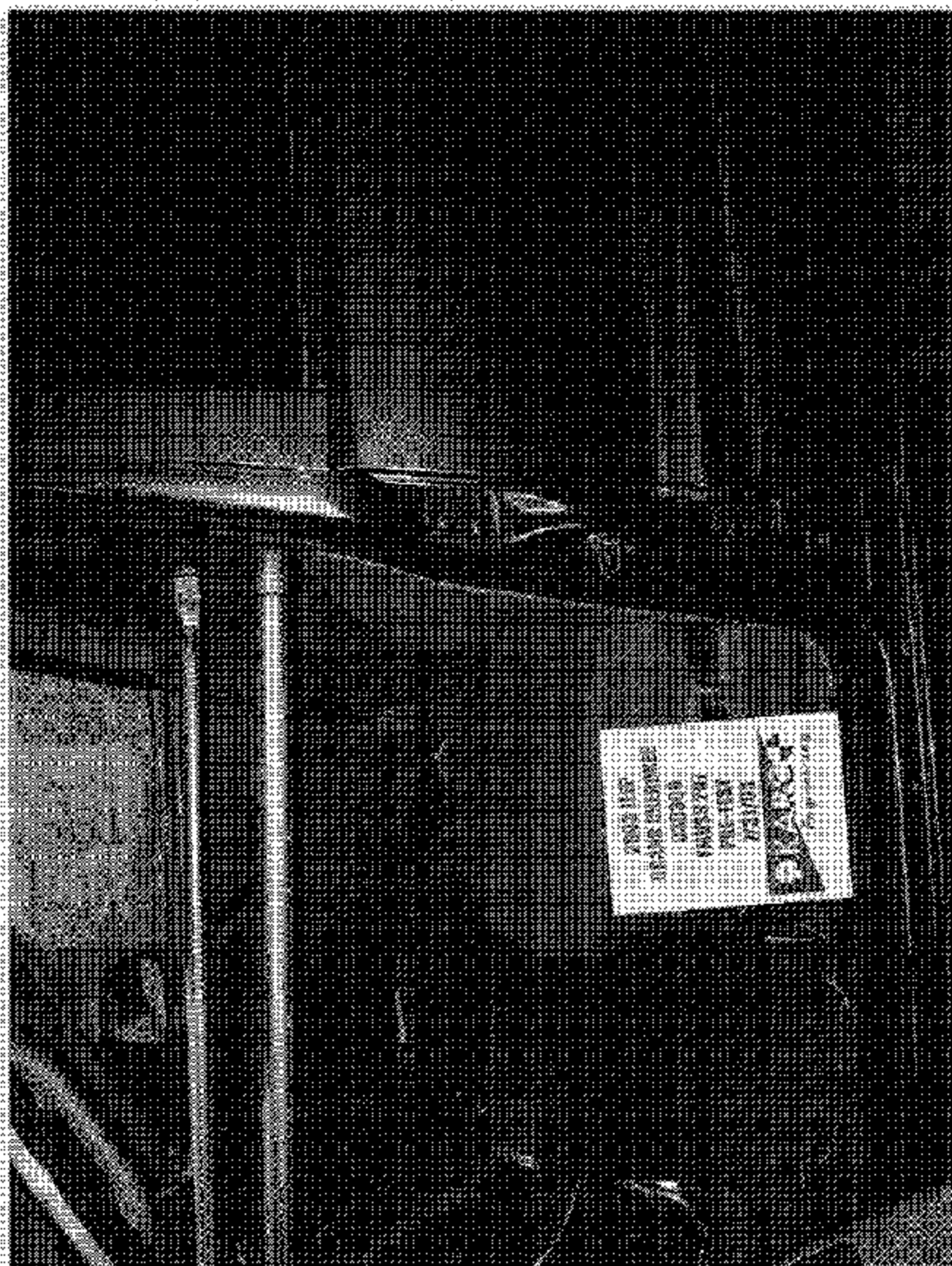


Figure A-11. Aft Moment on Gear Frame and Adjusters, Driver's Side, Pre-Test

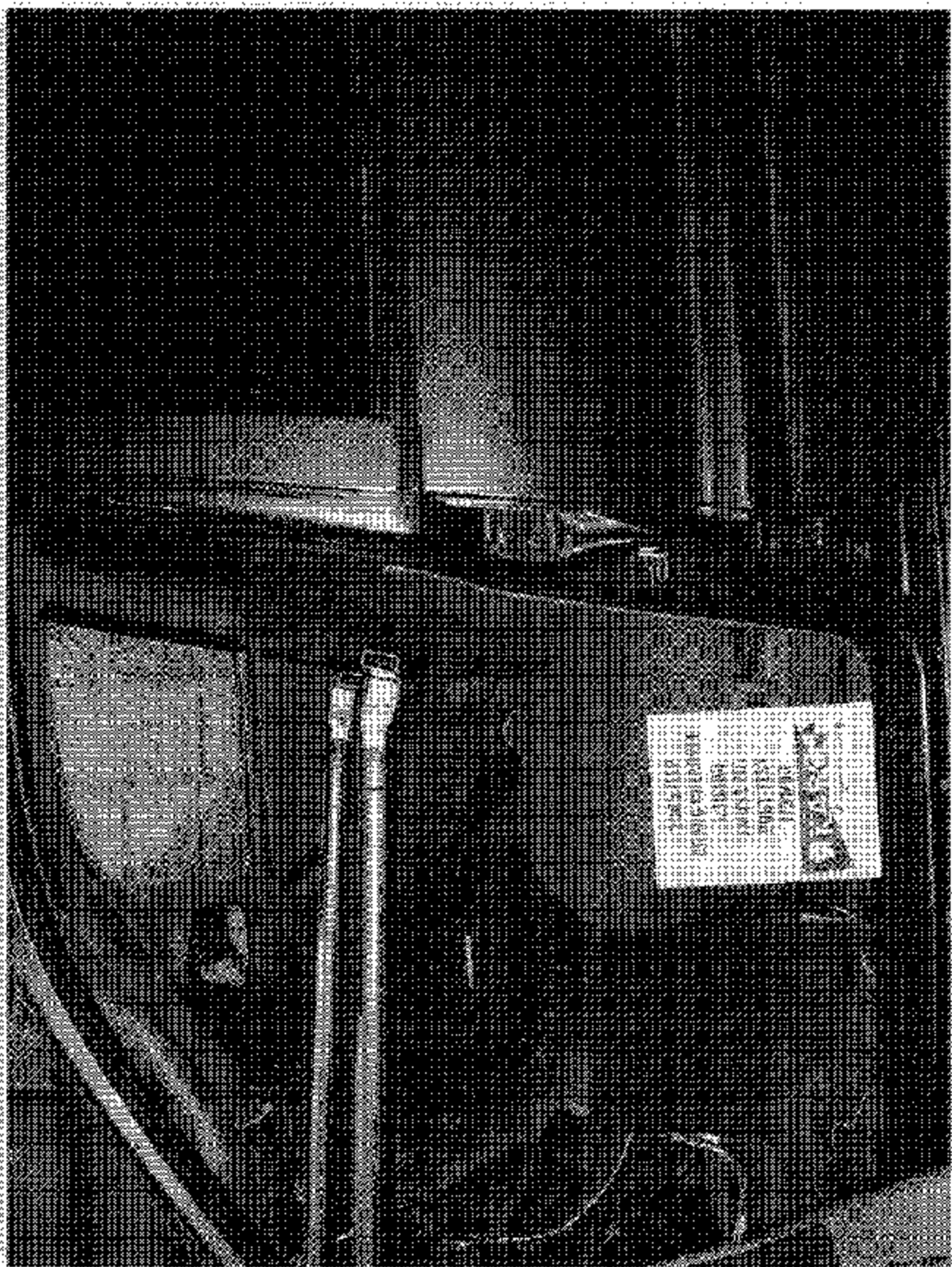


Figure A-12. Air Moment on Seat Frame and Adjusters, Driver's Side, Post-Test

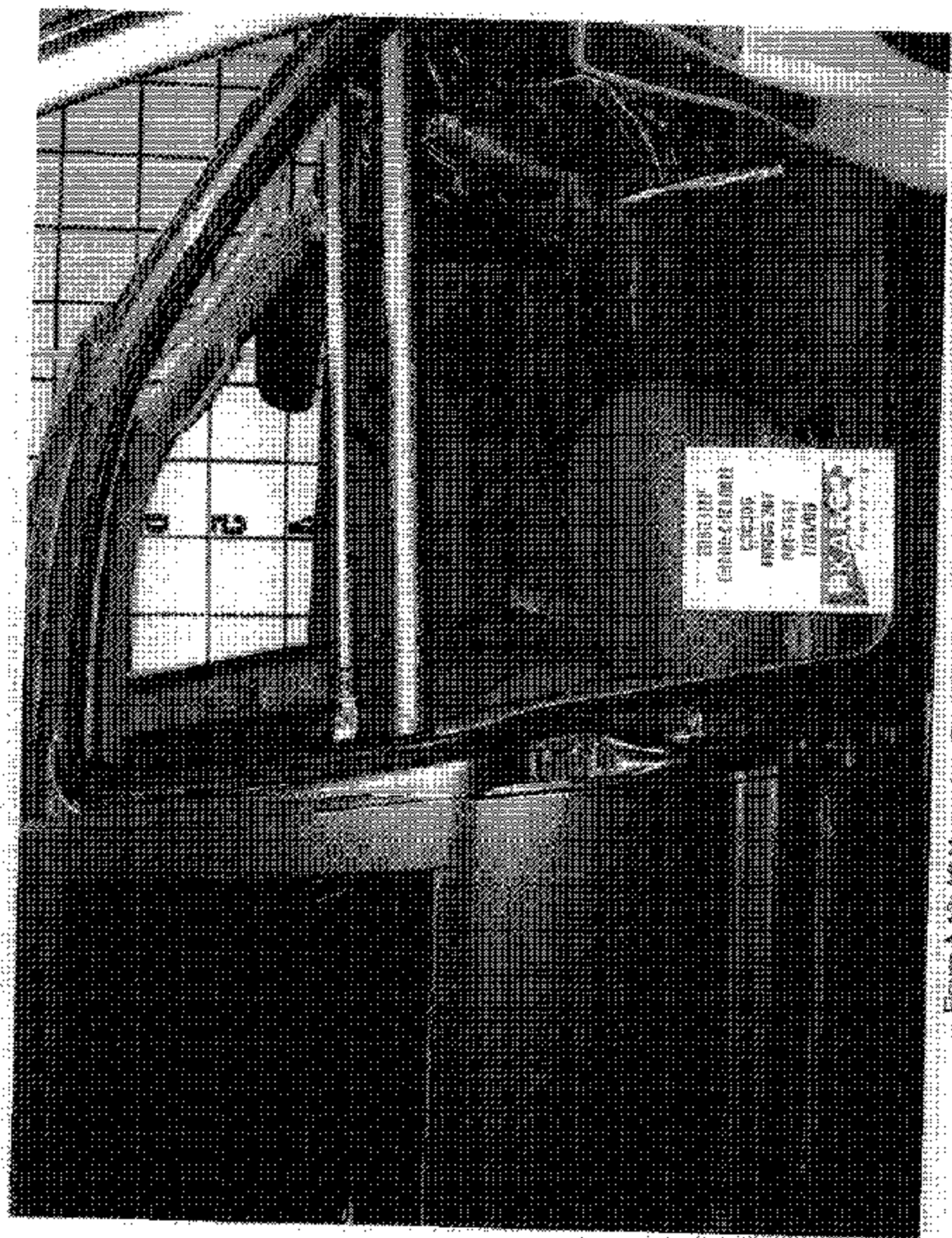


Figure A-13: Aft Moment on Seat Frame and Adjusters, Passenger's Side, Pre-Test

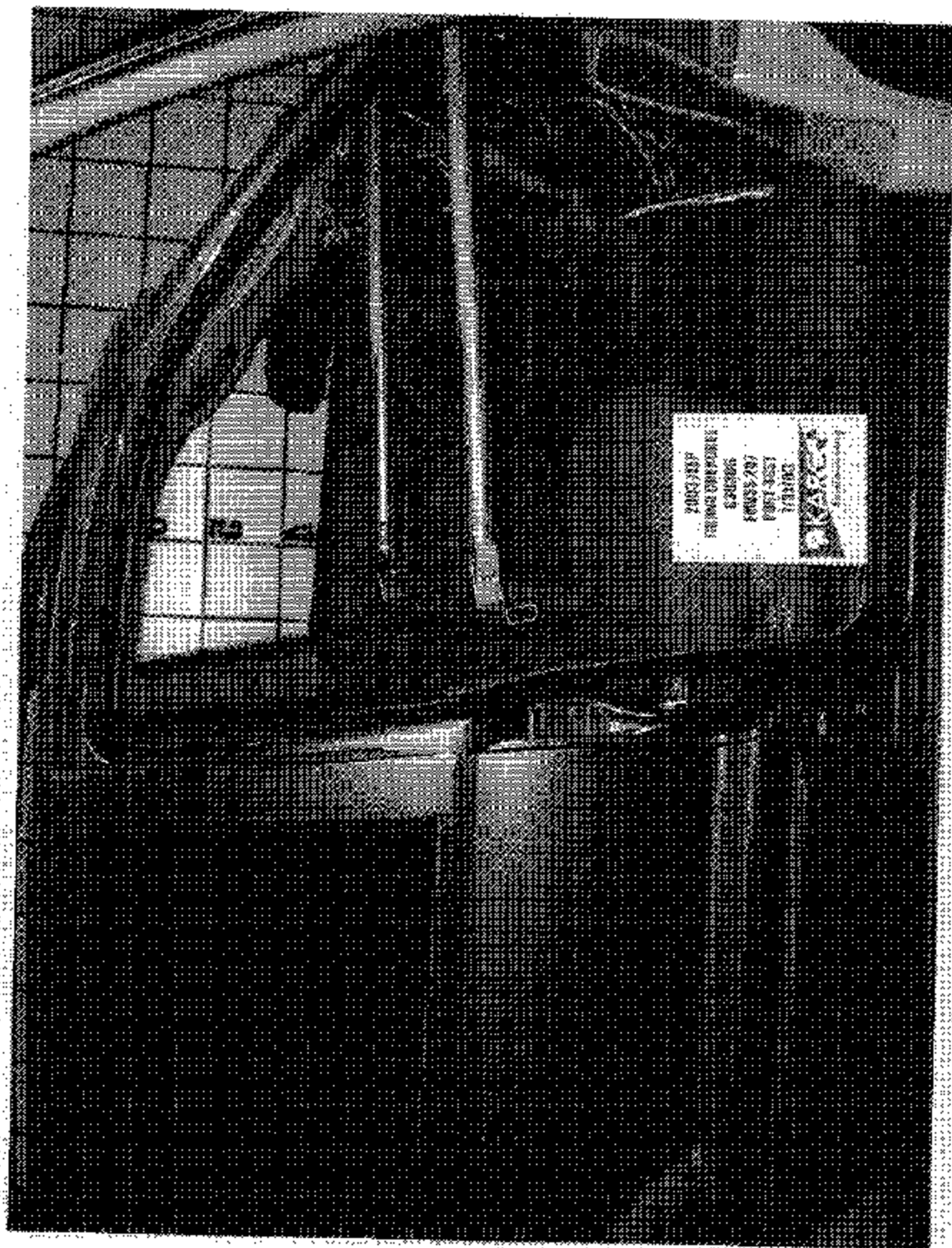


Figure A-14: Aft Moment on Seat Frame and Adjusters, Passenger's Side, Post-Test

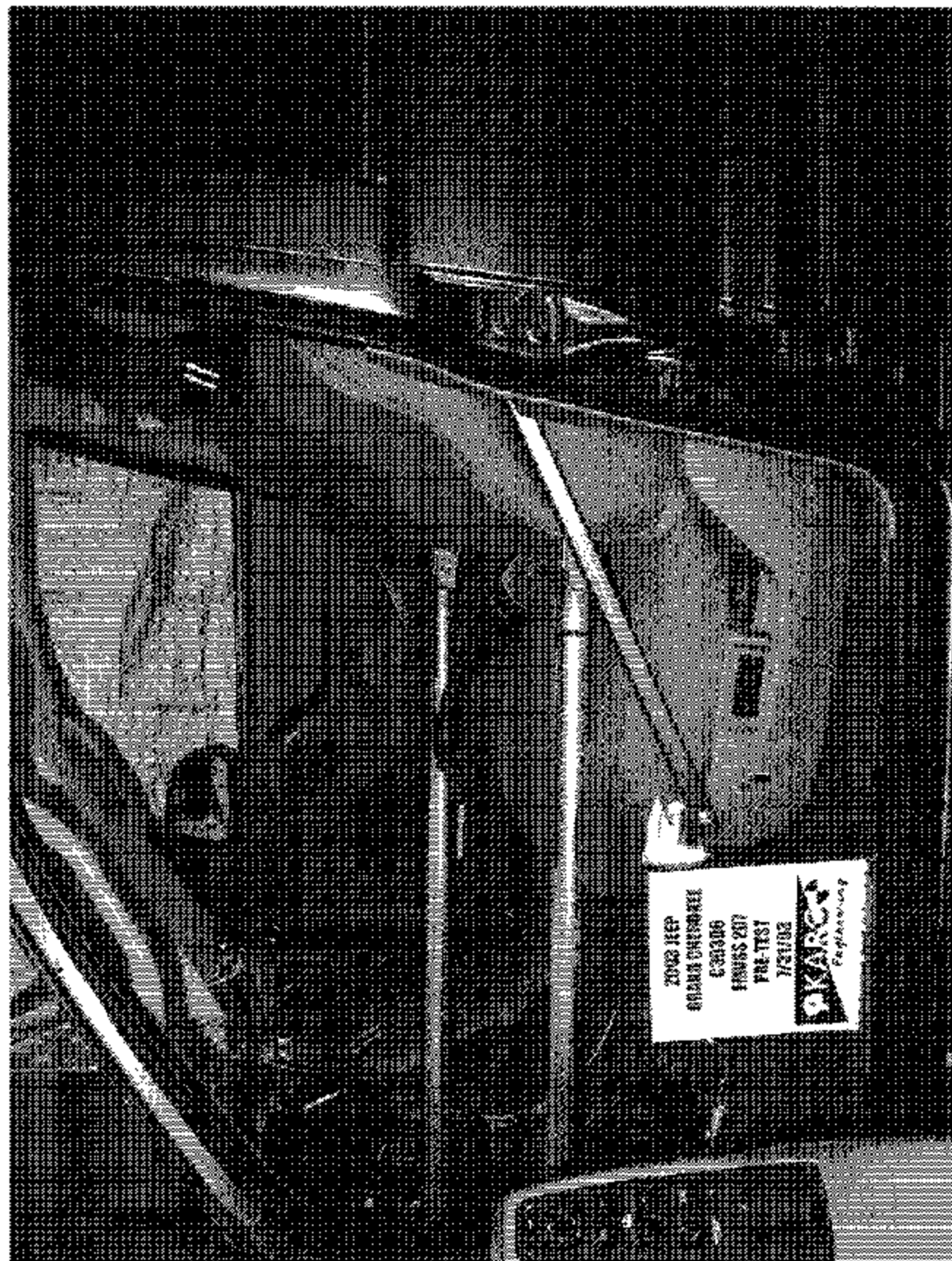


Figure A-15: Aft Load on Seat Frame and Adjusters, Driver's Side, Pre-Test

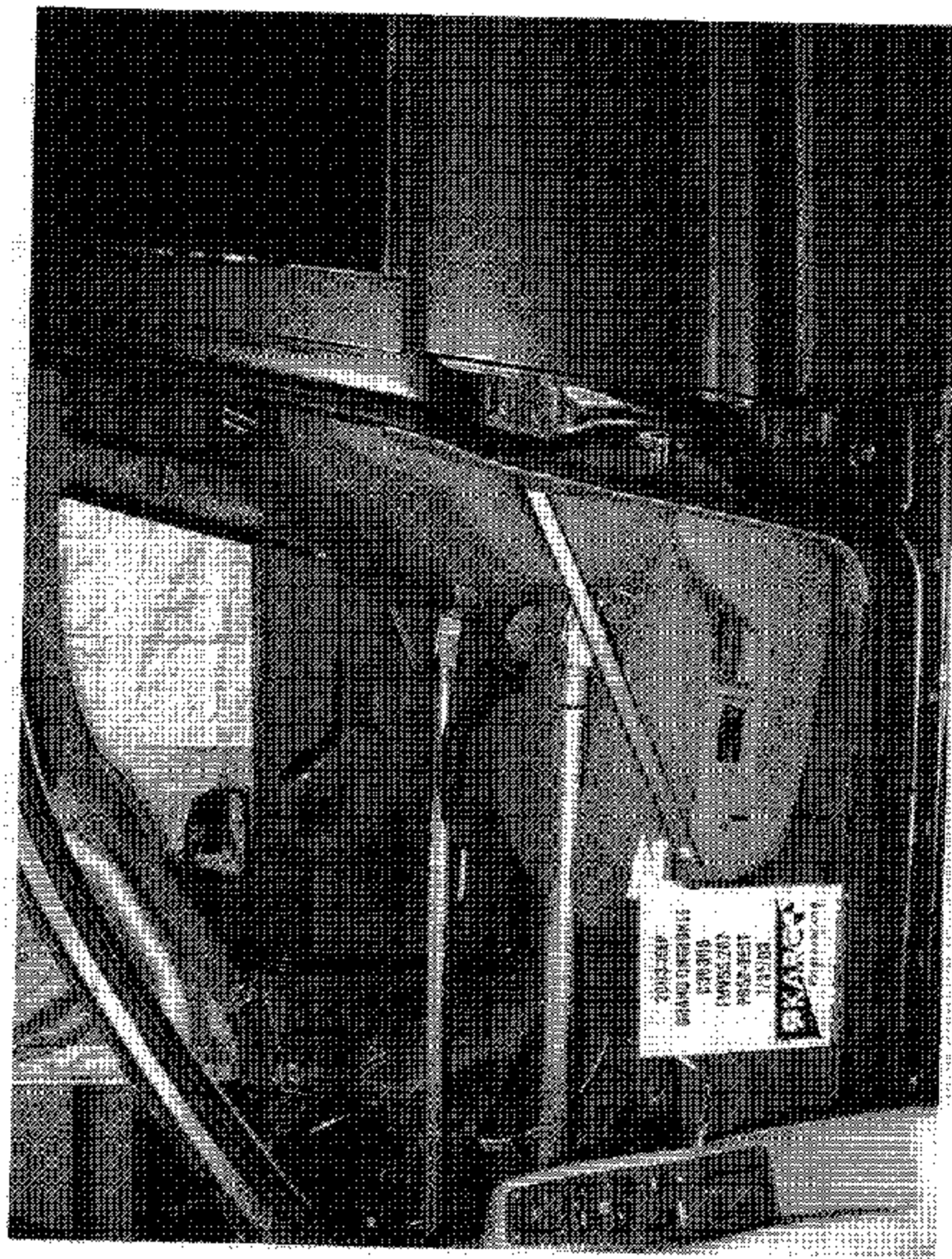


Figure A-16: Aft Load on Seat Frame and Adjusters, Driver's Side, Post-Test



Figure A-17: Aft Load on Seat Frame and Adjusters, Passenger's Side, Pre-Test

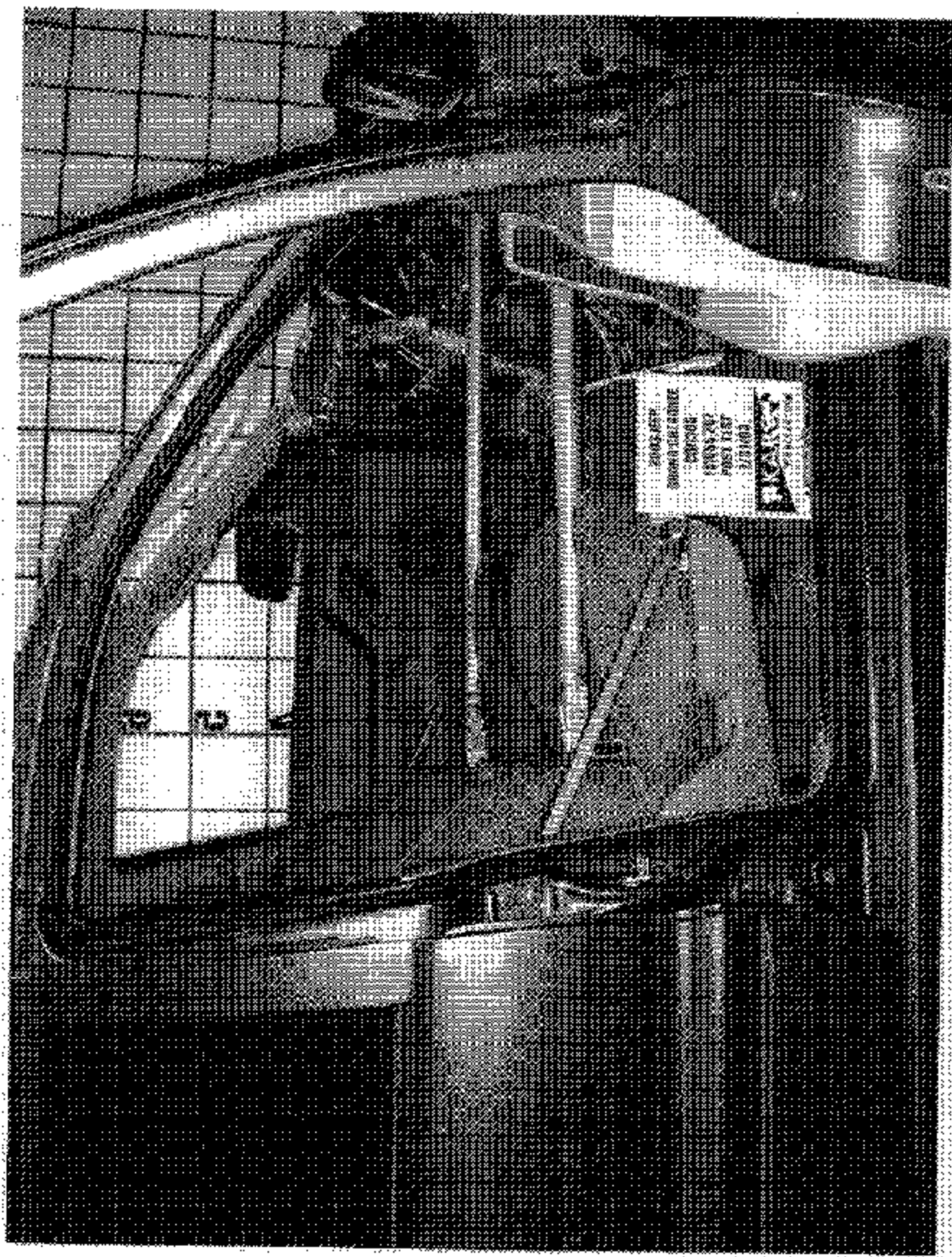


Figure A-18: Air Load on Seat Frame and Adjusters, Passenger's Side, Post-Test



Figure A-19: Forward Load on Seat Frame and Adjusters, Driver's Side, Pre-Test

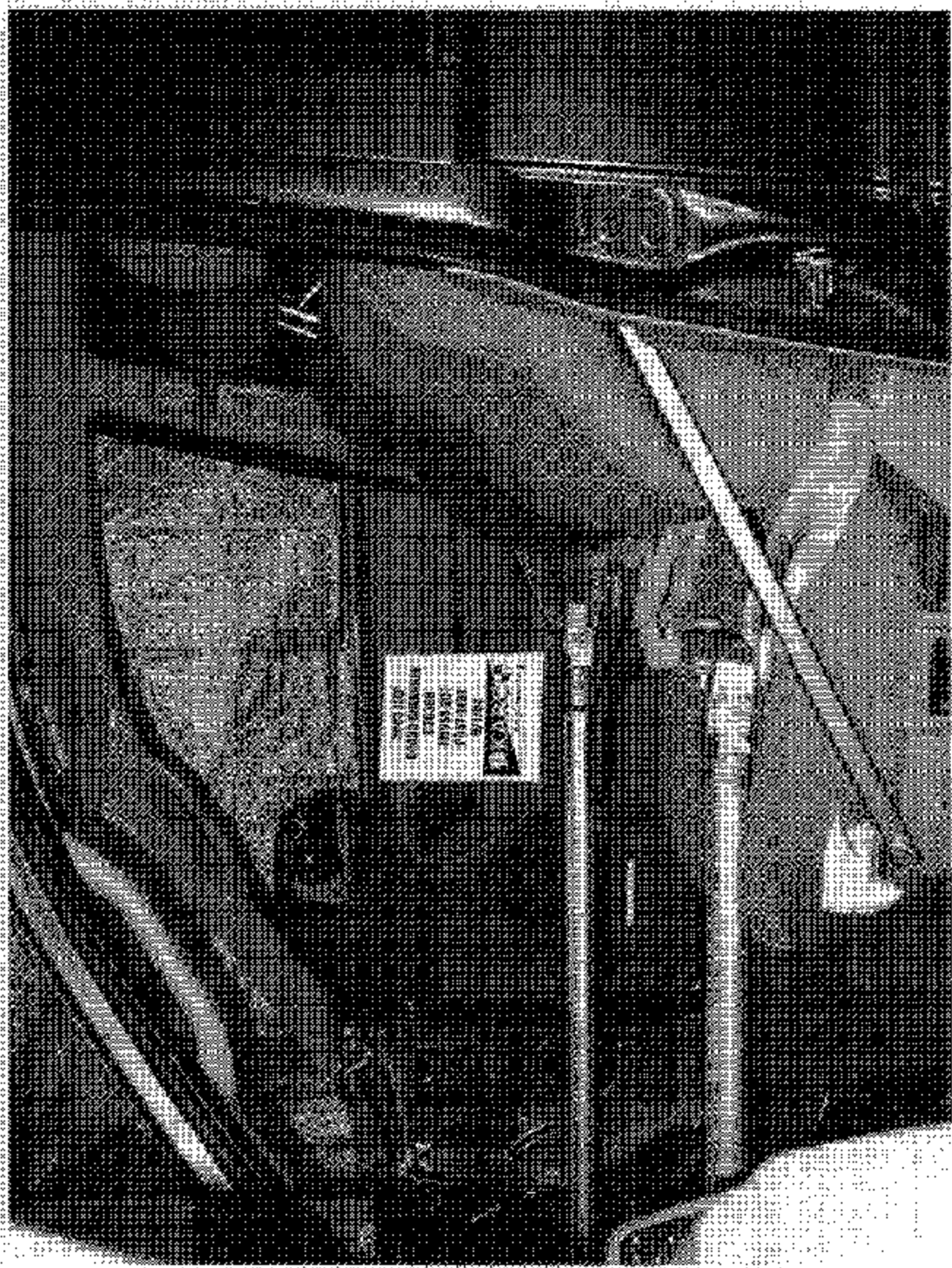


Figure A-20: Forward Load on Seat Frame and Adjusters, Driver's Side, Post Test

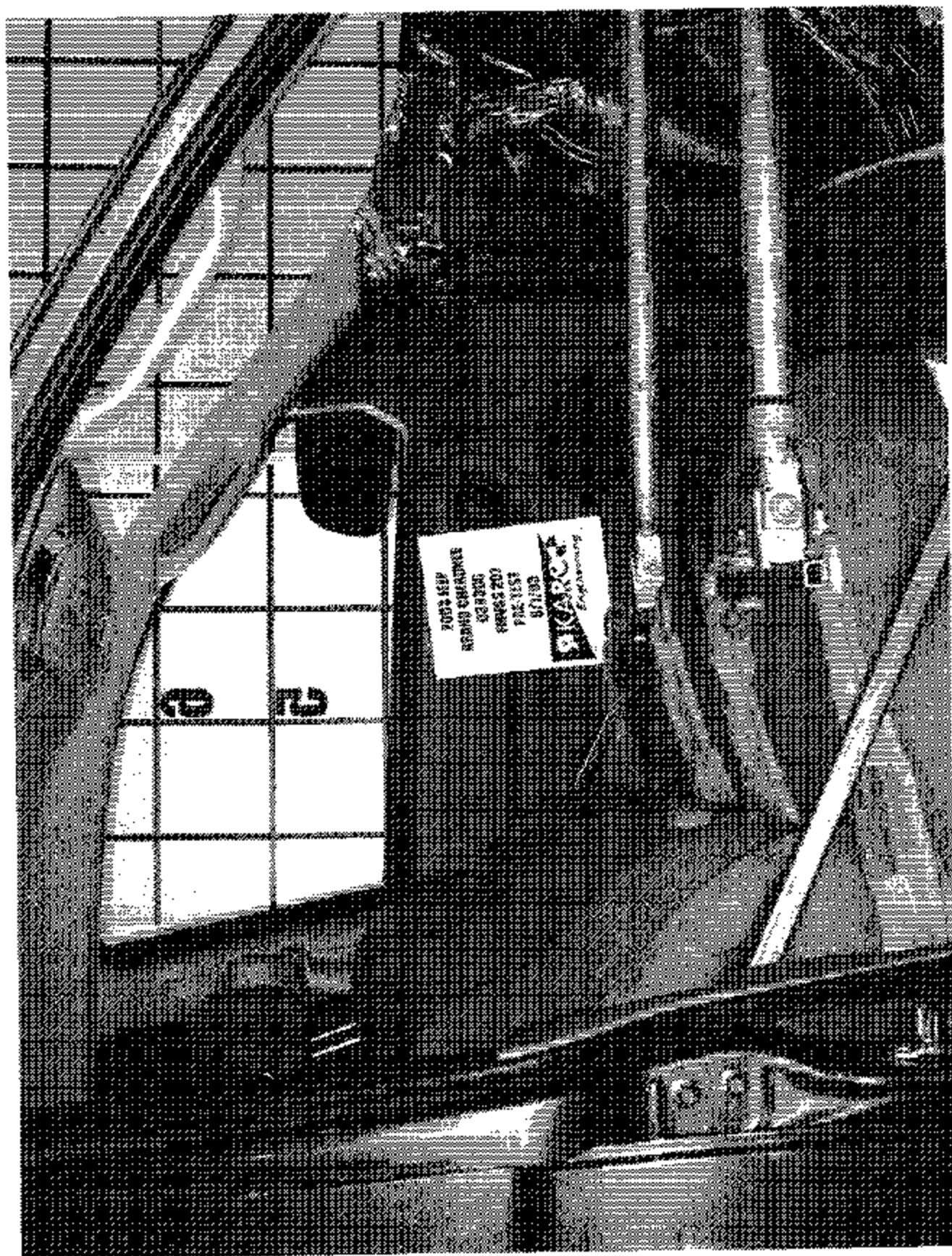


Figure A-21: Forward Load on Seat Frame and Adjusters, Passenger's Side, Pre-Test

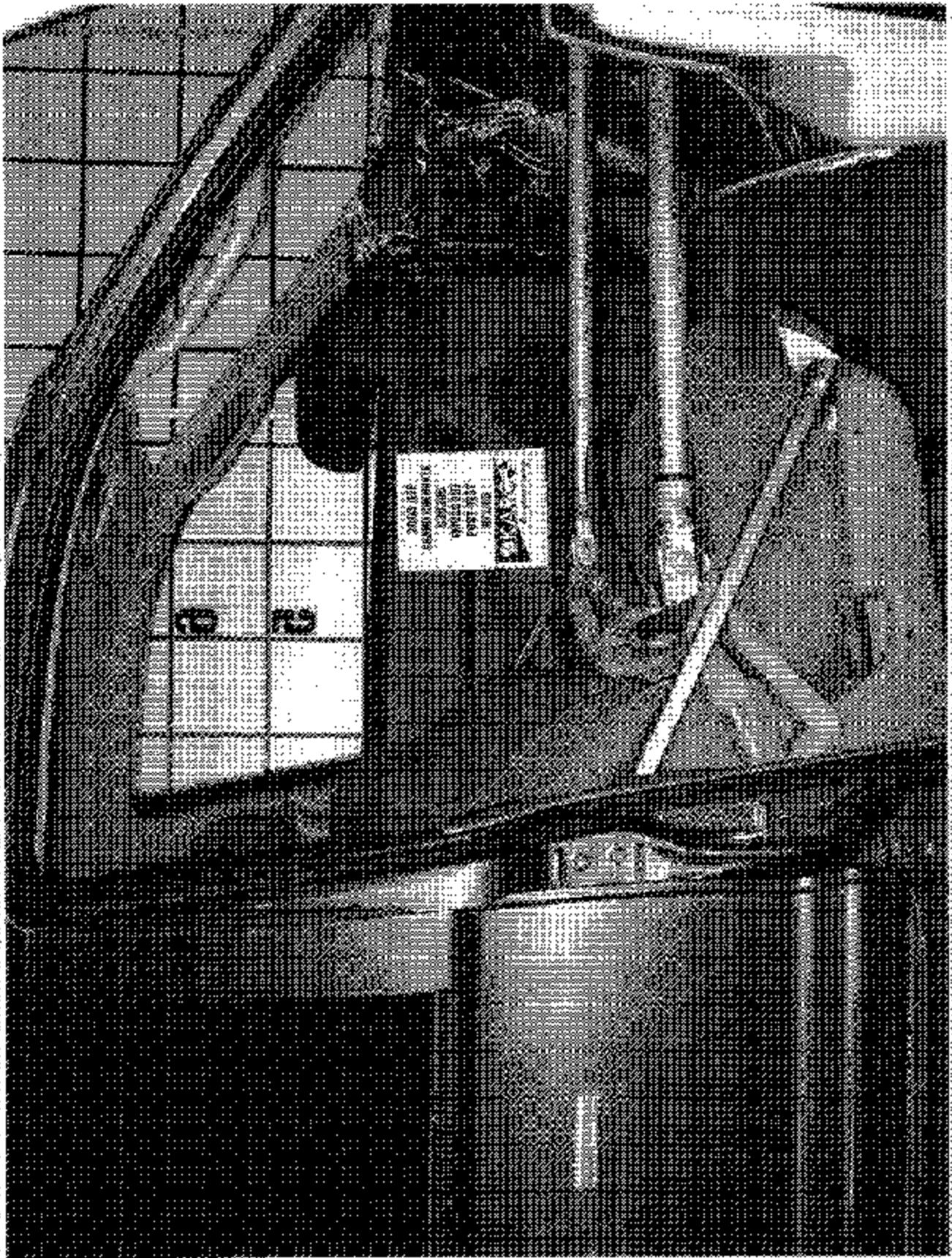


Figure A-22: Forward Load on Seat Frame and Adjusters, Passenger's Side, Post-Test



Figure A-23. Aft Moment on Seat Frame and Adjusters, Driver's Side Rear, Pre-Test

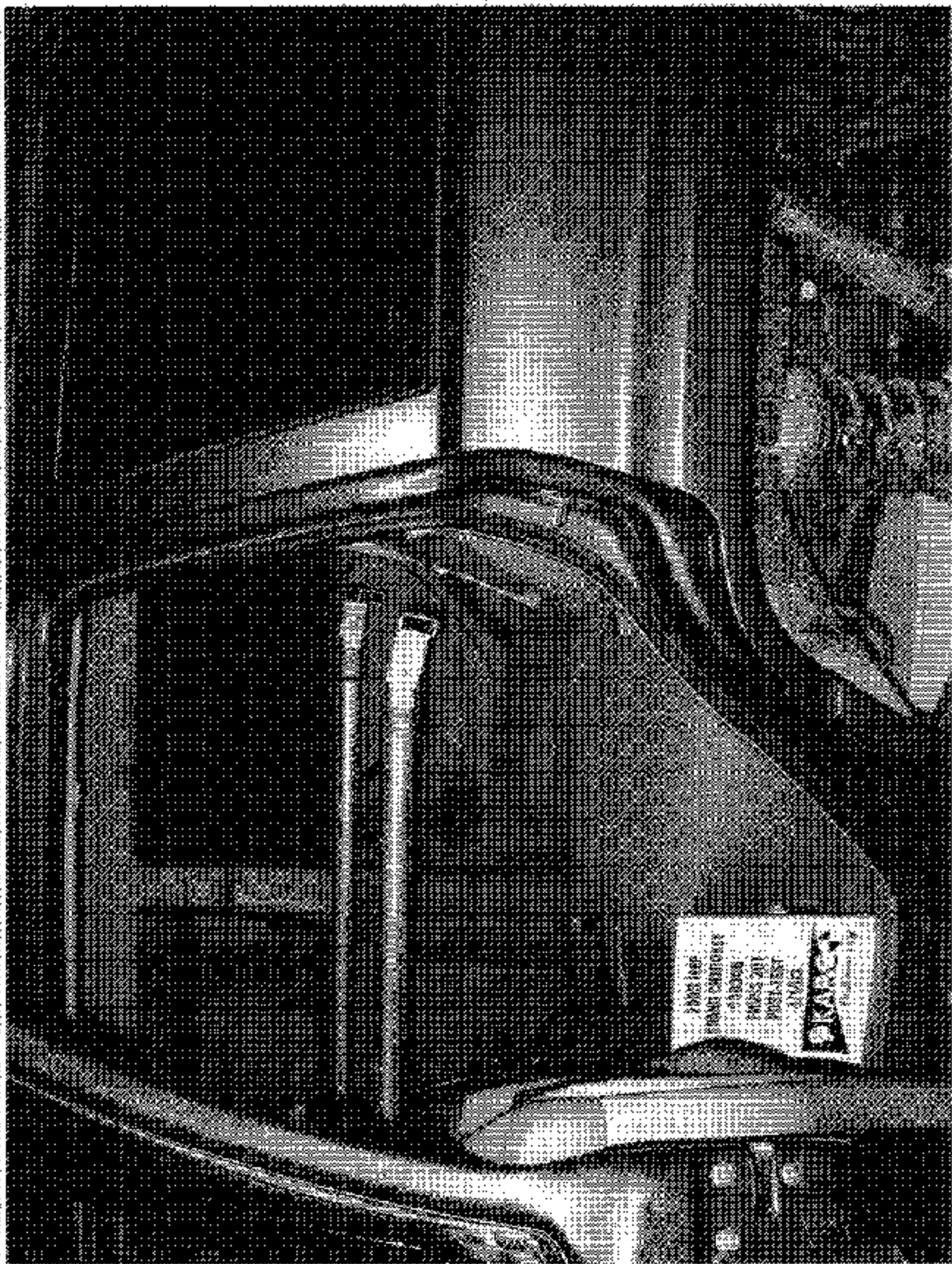


Figure A-24: All Moment on Seat Frame and Adjusters, Driver's Side Rear, Post-Test



Figure A-25: Aft Moment on Seat Frame and Adjusters, Passenger's Side Rear, Pre-Test



Figure A-26: Air Moment on Seat Frame and Adjusters, Passenger's Side Rear, Post-Test

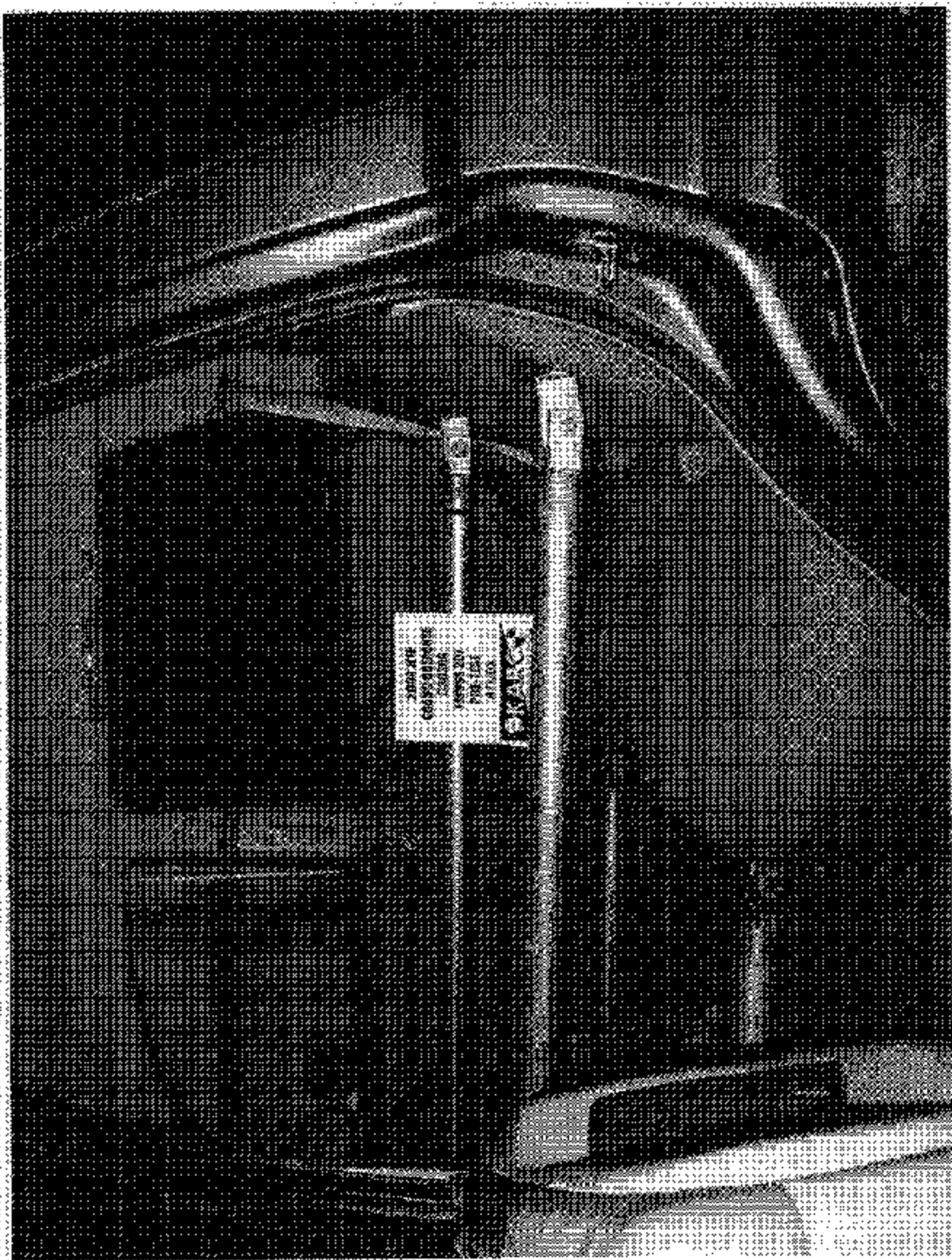


Figure A-27: Air Load on Seal Frame and Adjusters, Driver's Side Rear, Pre-Test



Figure A-28. Air Load on Seat Frame and Adjusters, Driver's Side Rear, Post-Test

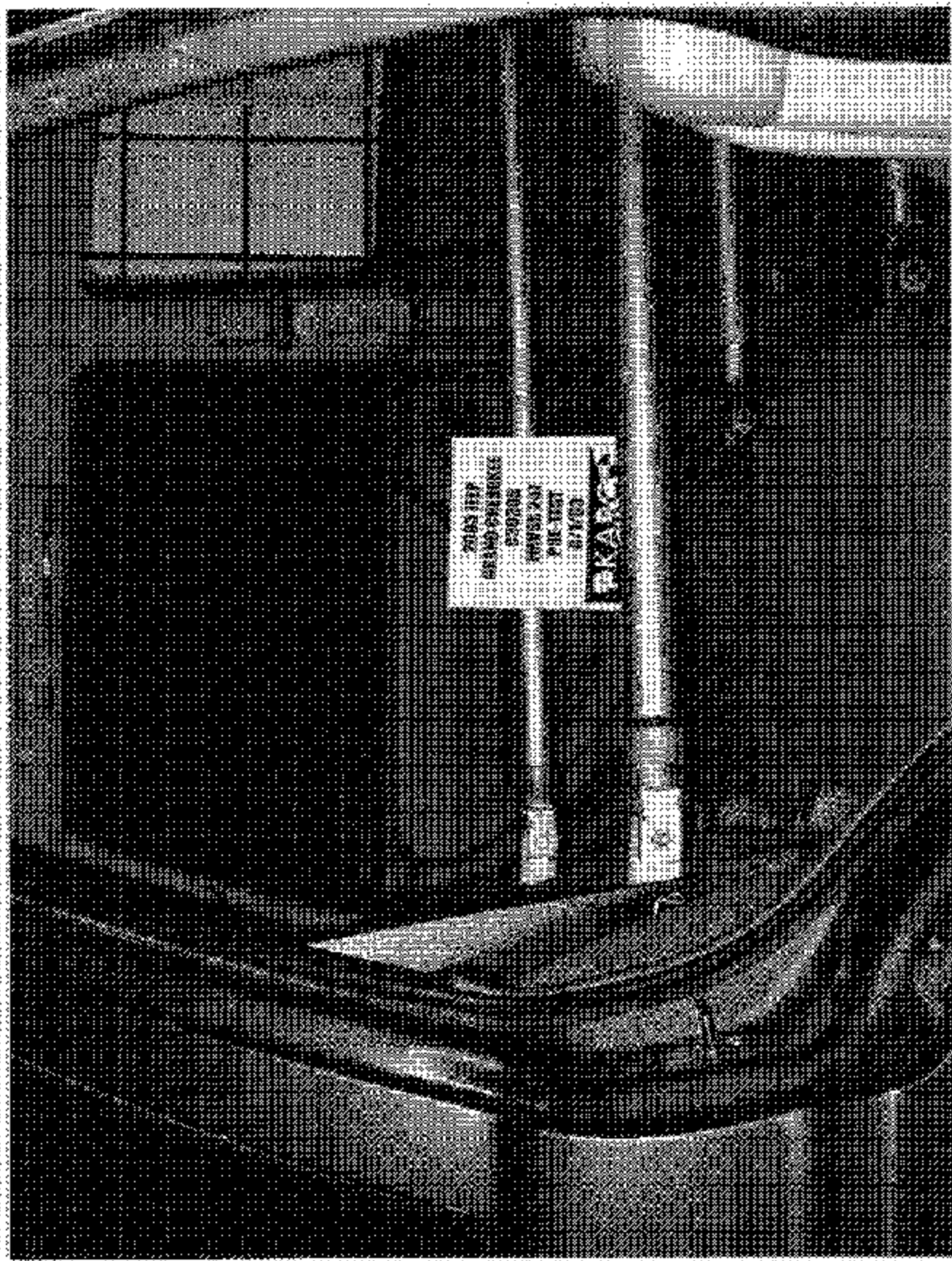


Figure A-29: All Load on Seat Frame and Adjusters, Passenger's Side Rear, Pre-Test



Figure A-30: Air Load on Seat Frame and Adjusters, Passenger's Side Rear, Post-Test

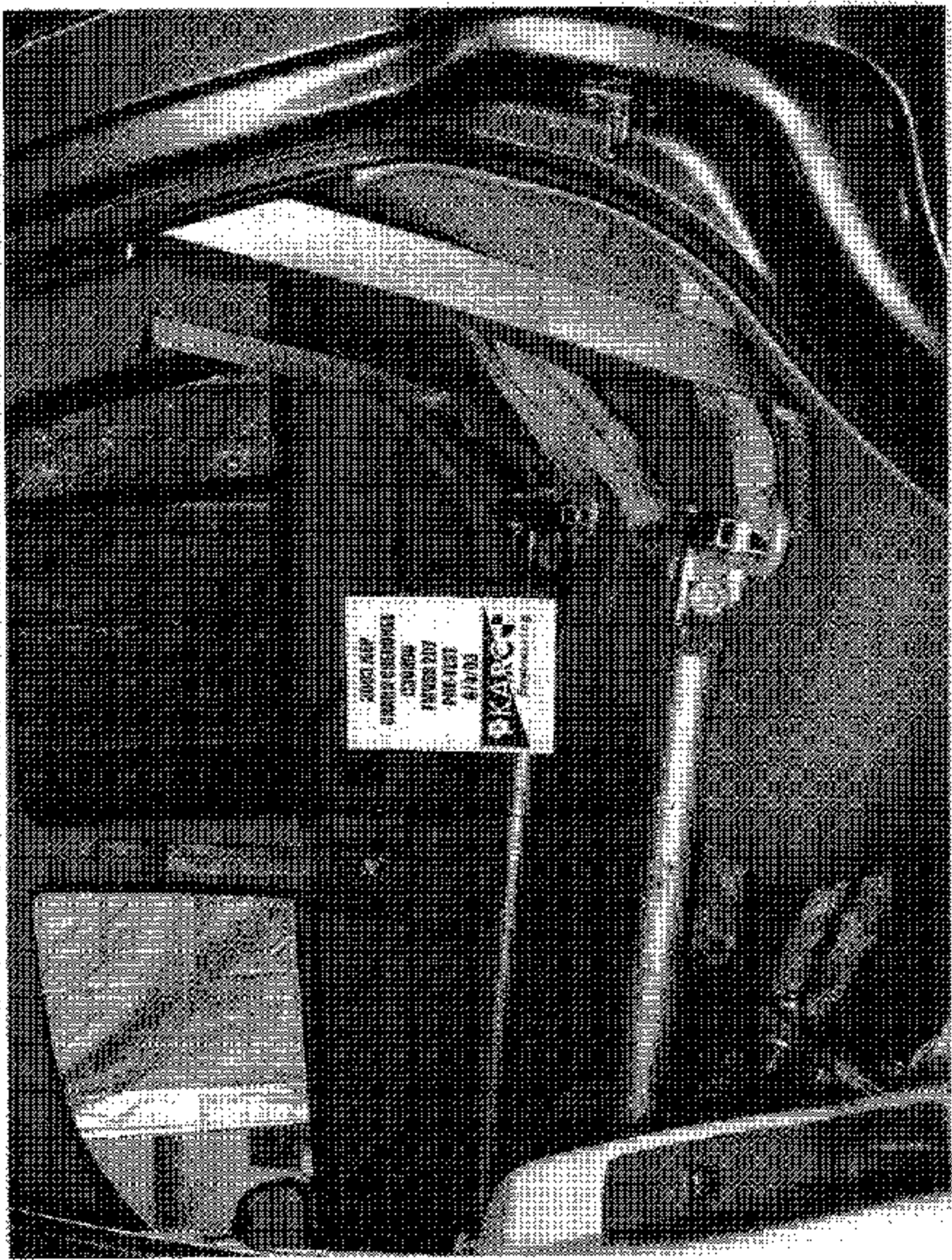


Figure A-31: Forward Load on Seat Frame and Adjusters, Driver's Side Rear, Pre-Test

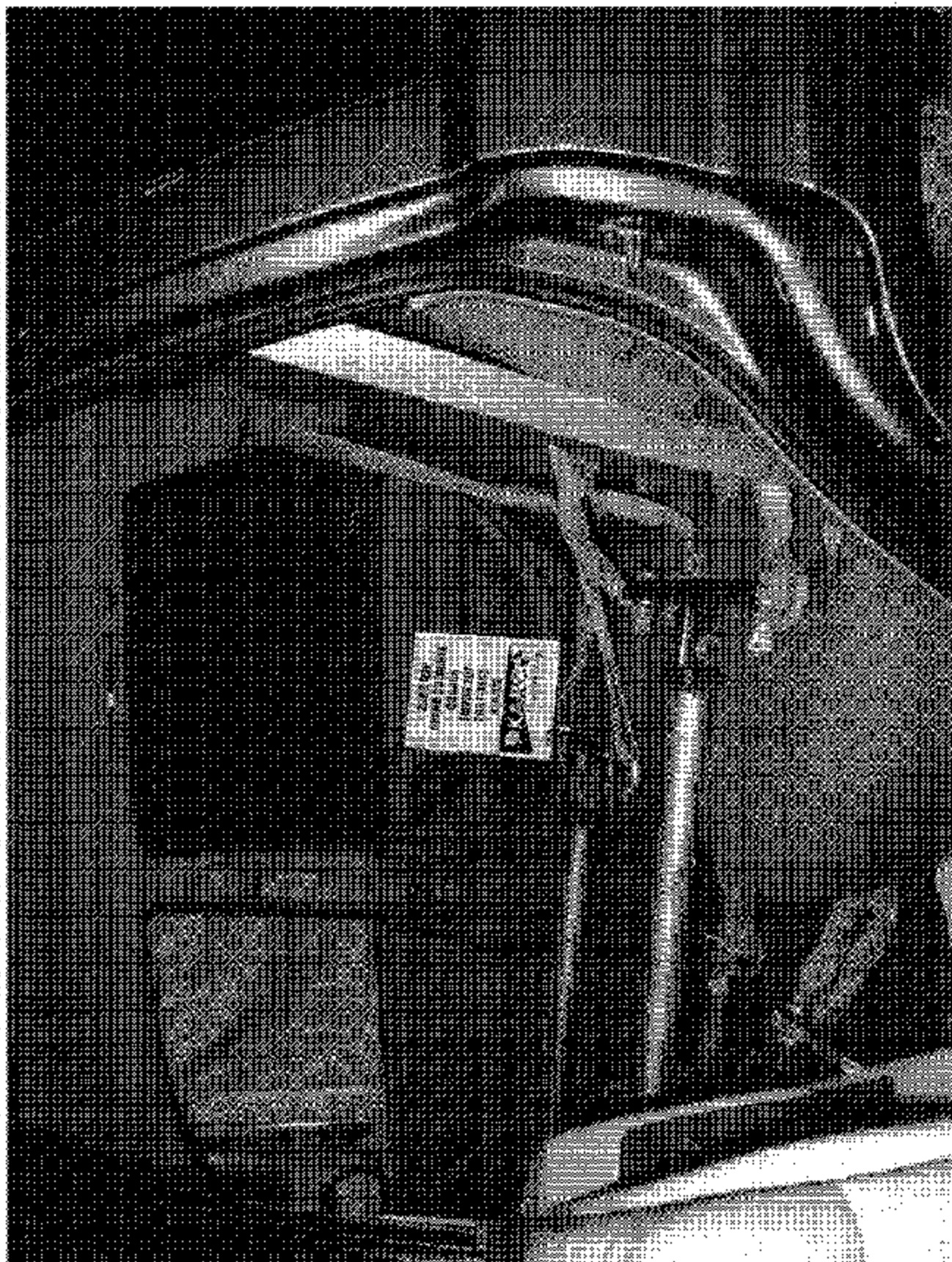


Figure A-32. Forward Load on Seat Frame and Adjusters, Driver's Side Rear, Post-Test

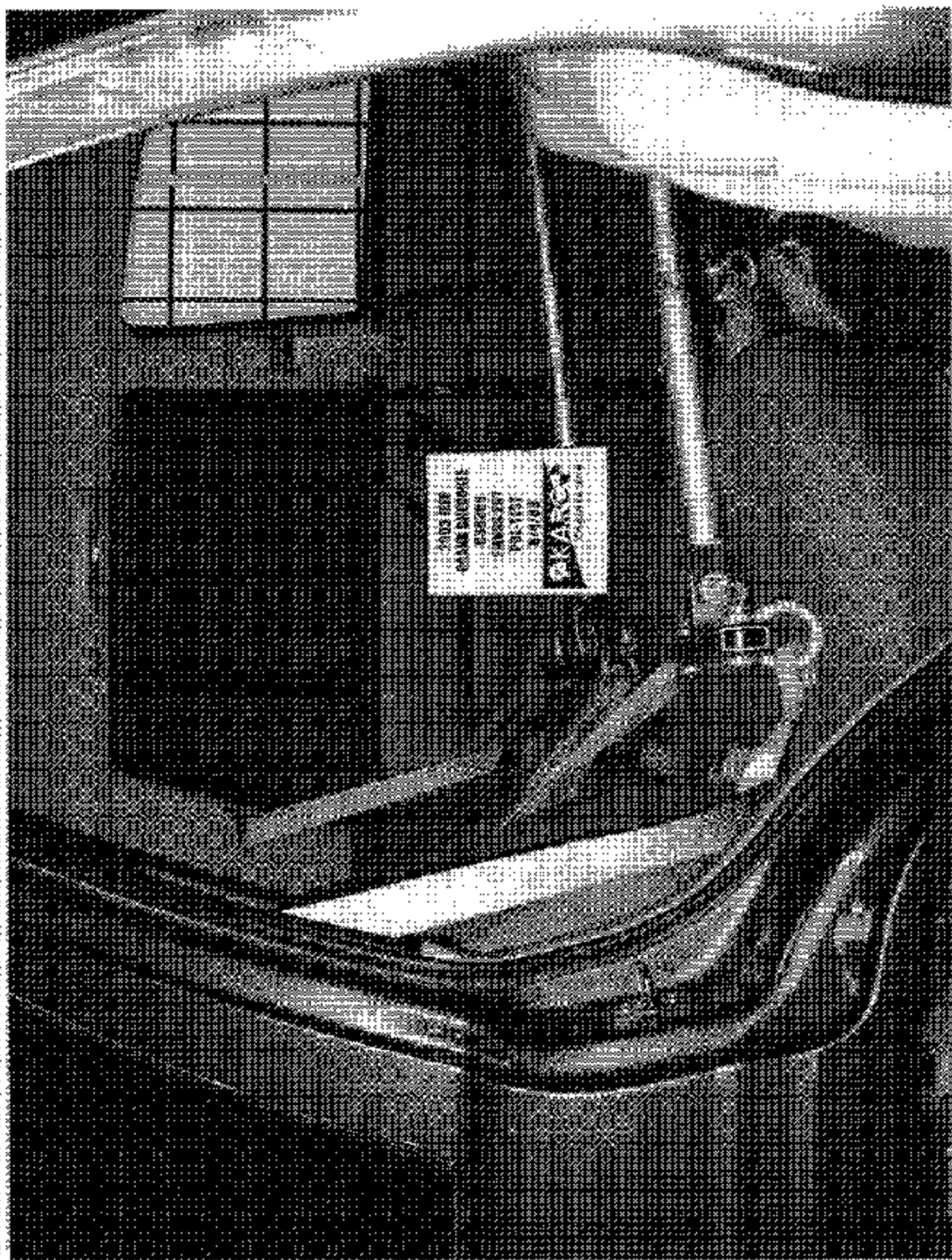


Figure A-33: Forward Load on Seat Frame and Adjusters, Passenger's Side Rear, Pre-Test

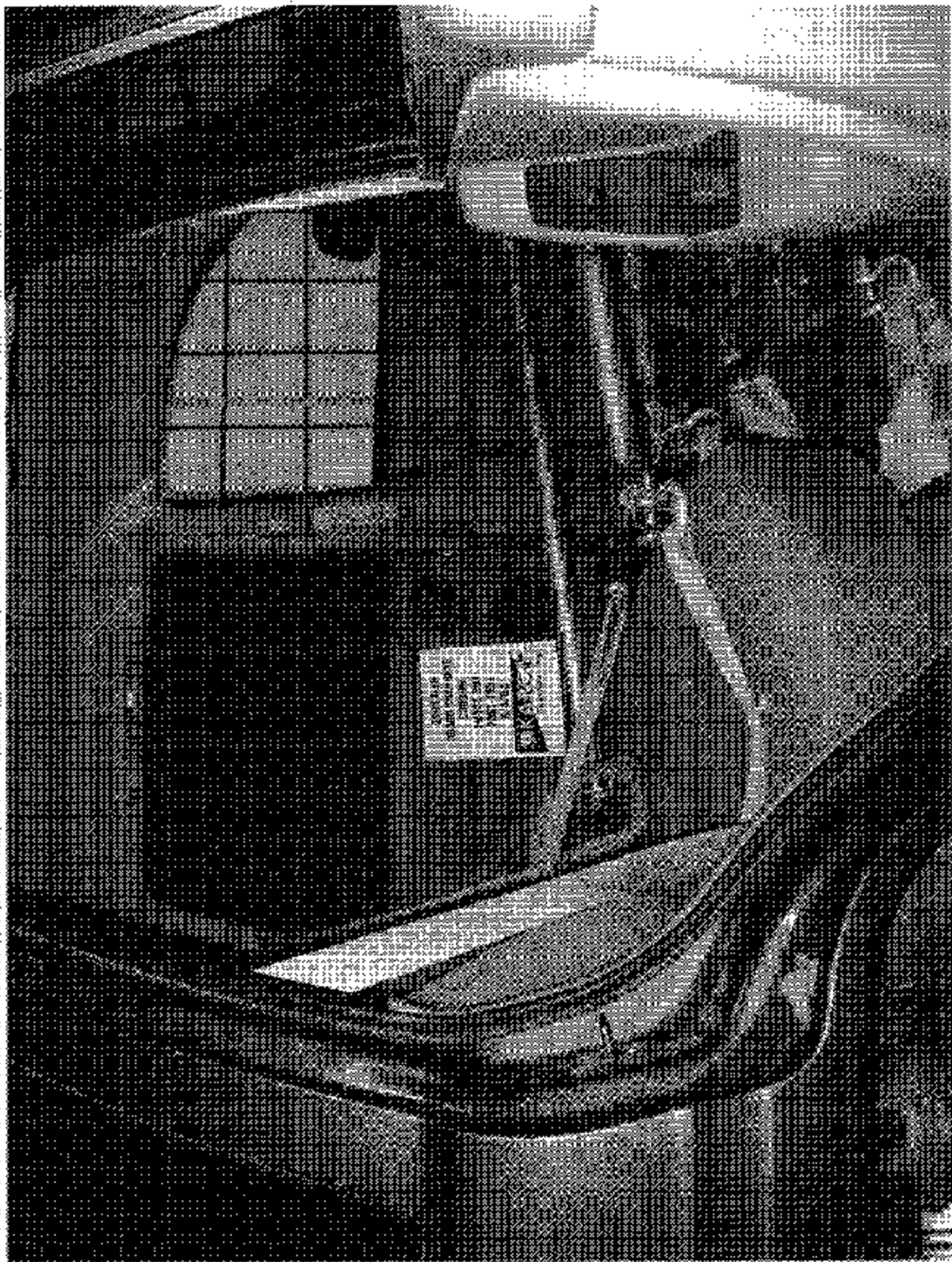


Figure A-34. Forward Load on Seat Frame and Adjusters, Passenger's Side Rear, Post-Test

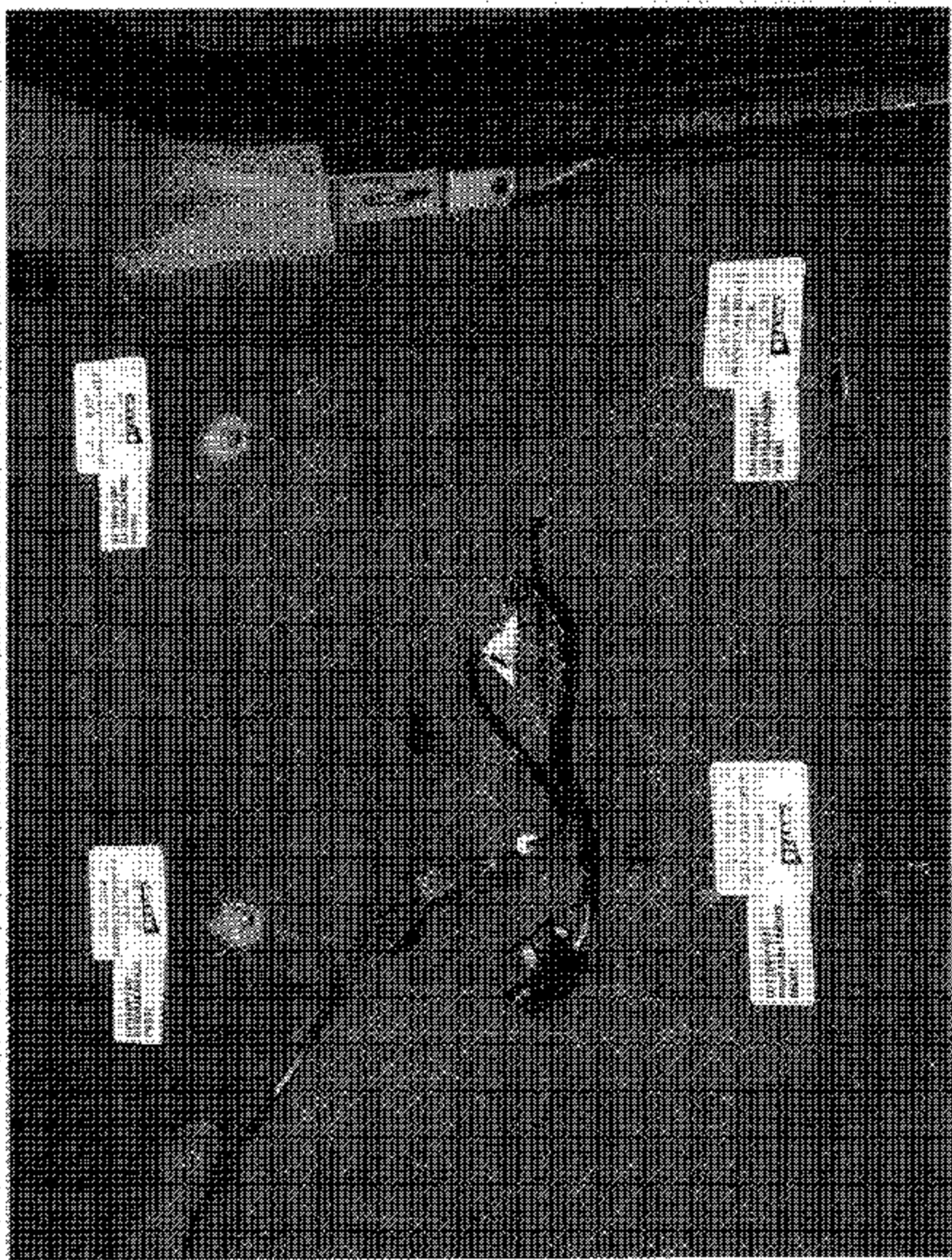


Figure A-35: Floor Pan Anchors, Left Front Seat Overall, Pre-Test

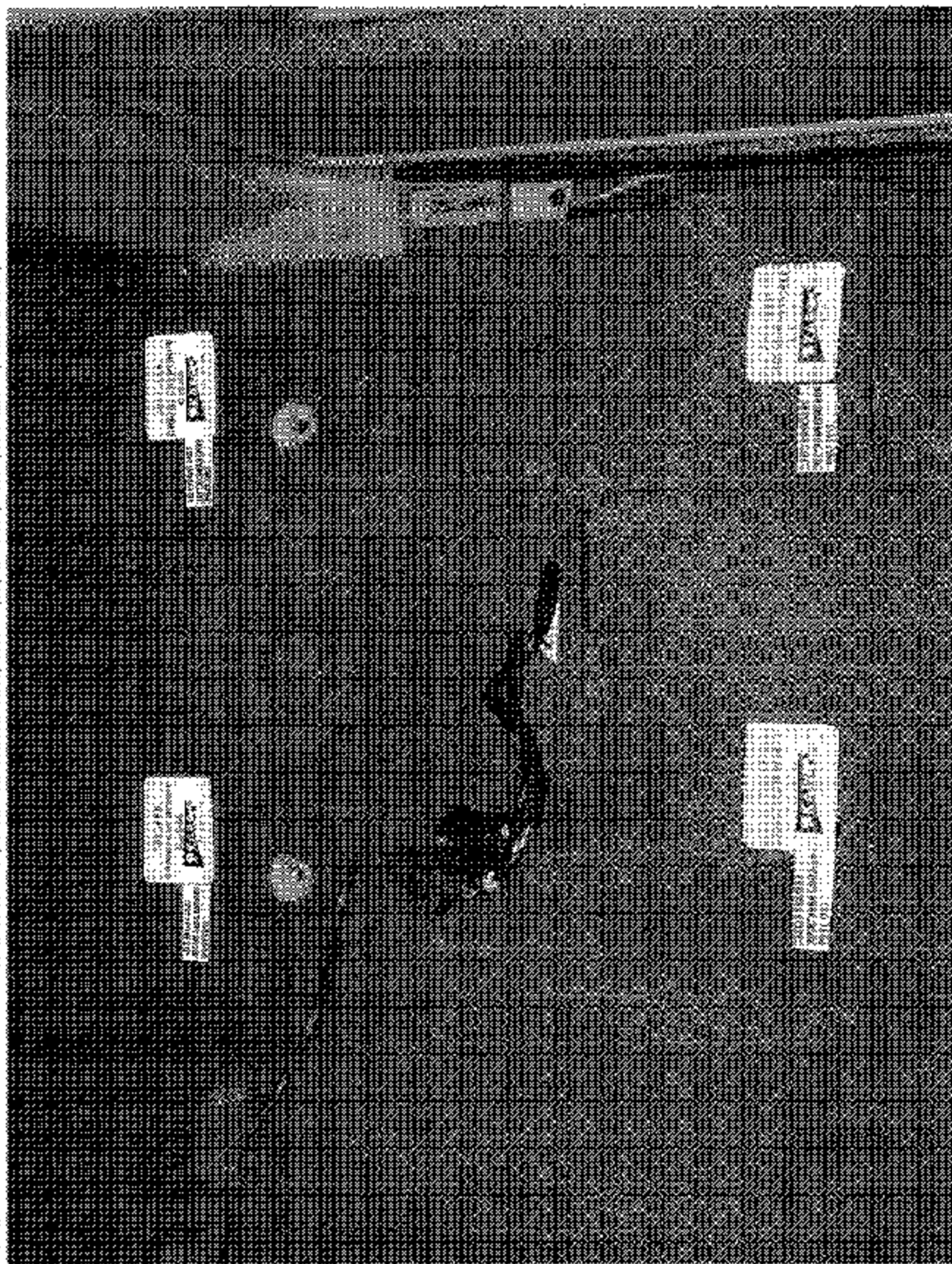


Figure A-36: Floor Pan Anchors, Left Front Seat Overall, Post-Test

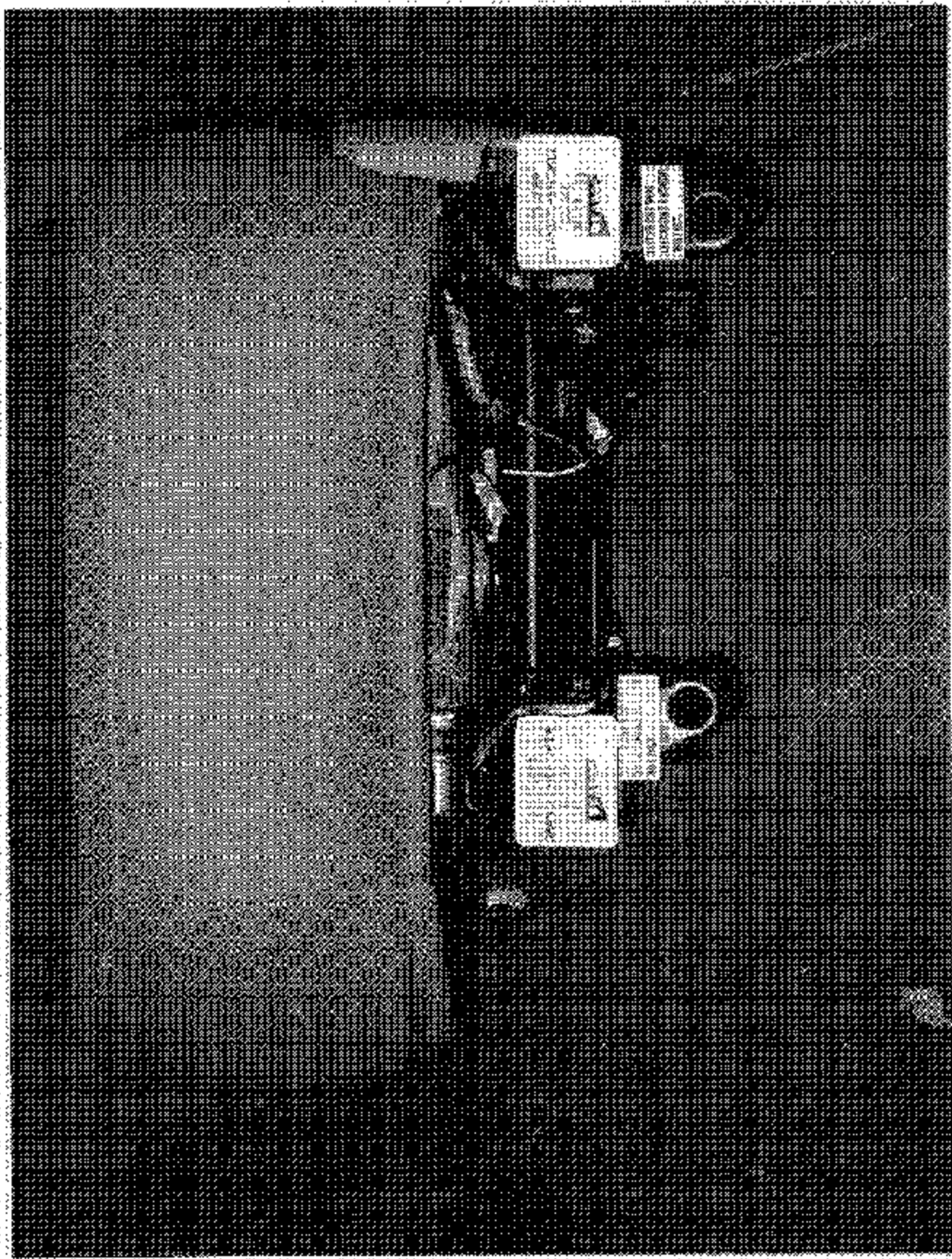


Figure A-37: Seat Anchors, Left Front Seat Overall (Front), Pre-Test

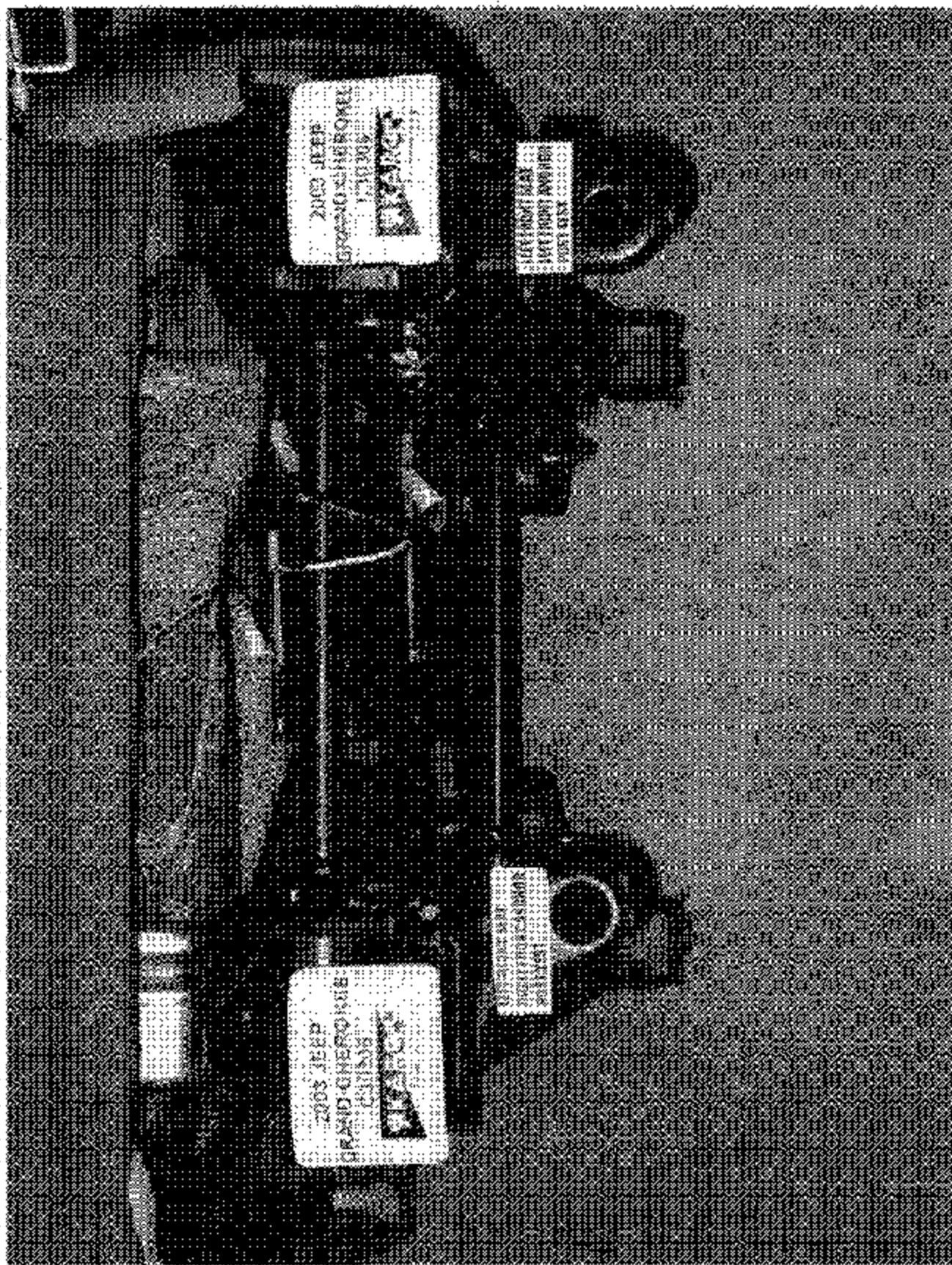


Figure A-38: Seat Anchors, Left Front Seat Overall (Front), Post-Test

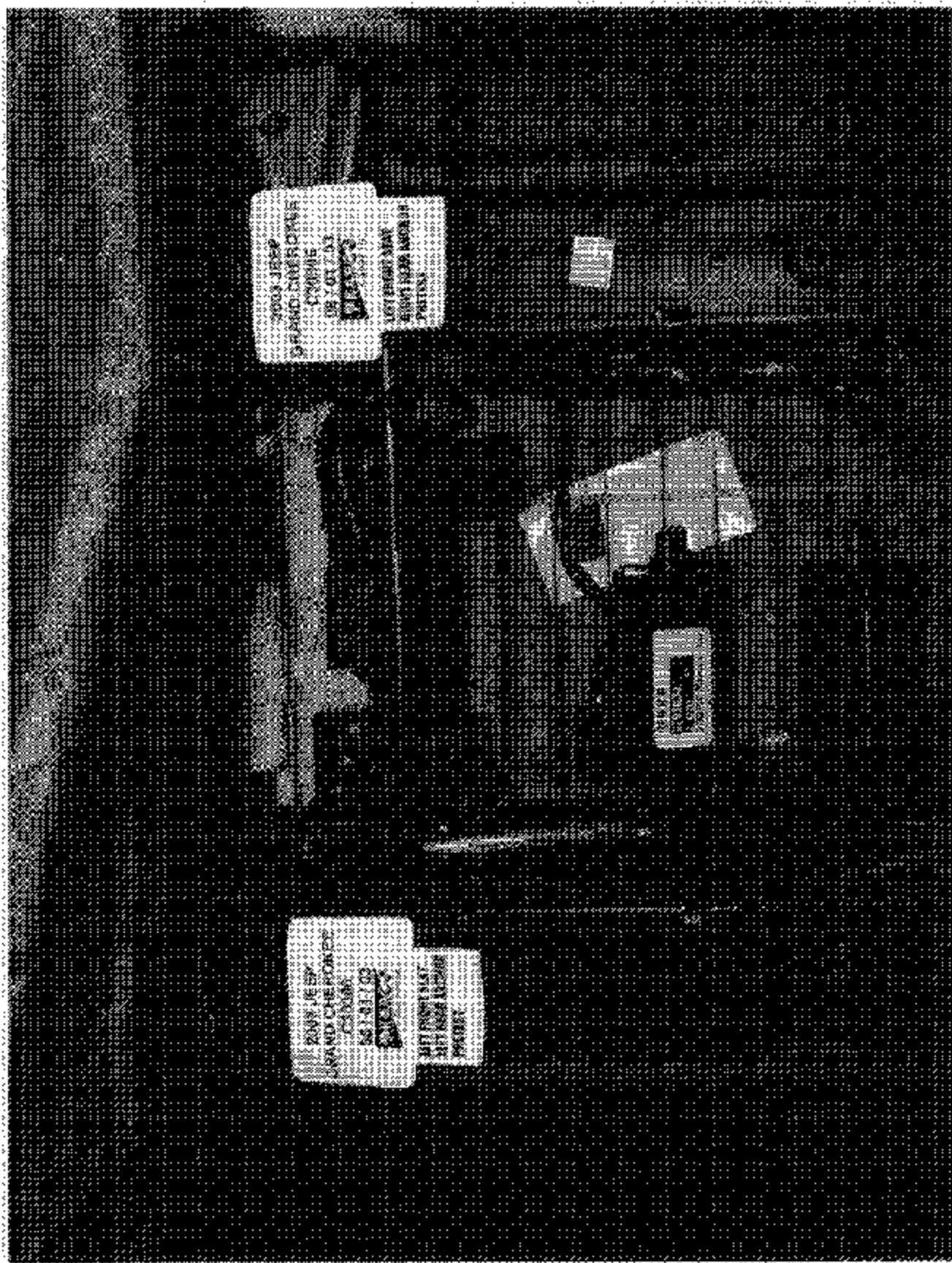


Figure A-39: Seat Anchors, Left Front Seat Overall (Rear), Pts-Tast

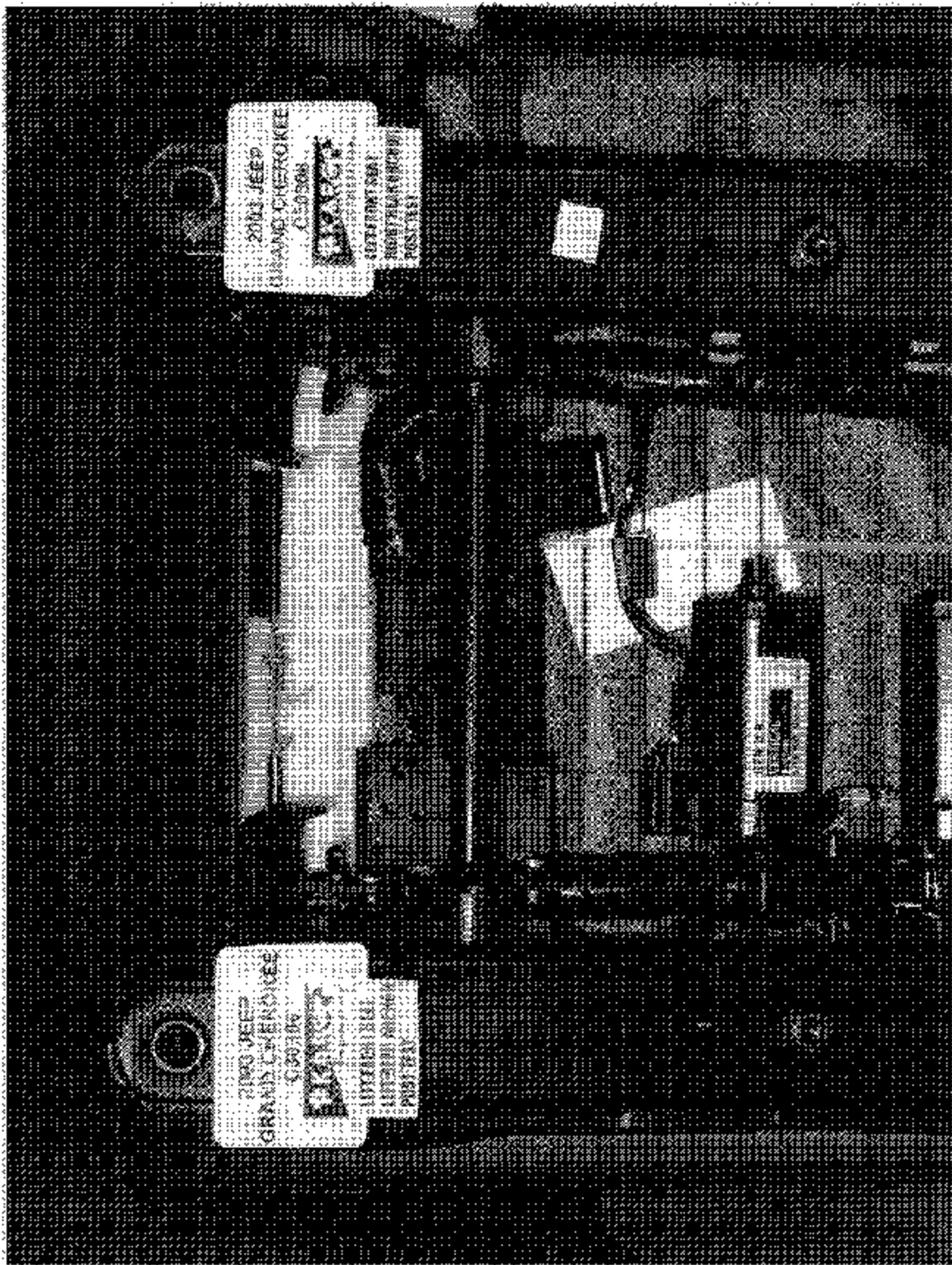


Figure A-40: Seat Anchors, Left Front Seat Overall (Rear), Post-Test

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PKARC
Engineering

LEFT FRONT SEAT
LEFT FRONT ANCHOR
PRETEST

Figure A-41: Floor Pan Anchor, Left Front Seat, Pre-Test

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LEFT FRONT SEAT
LEFT FRONT ANCHOR
POST TEST

Figure A-42: Floor Pan Anchor, Left Front Seat, Post-Test

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LEFT FRONT SEAT
LEFT FRONT ANCHOR
PRETEST

Figure A-43: Seal Anchor, Left Front Seat, Pre-Test



Figure A-44. Seat Anchor, Left Front Seat, Post-Test

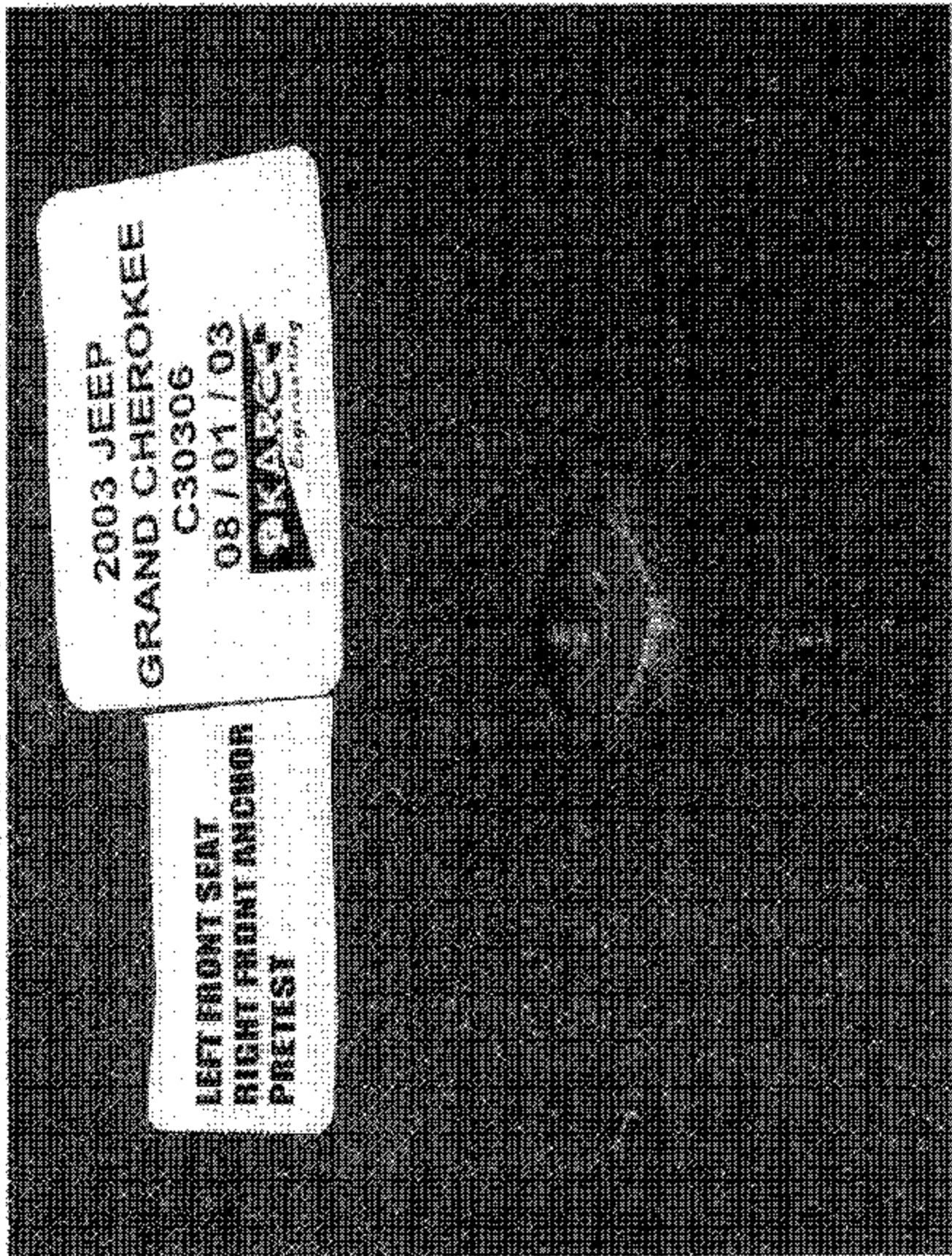


Figure A-45: Floor Pan Anchor, Left Front Seat, Pre-Test



Figure A-46: Floor Pan Anchor, Left Front Seat, Post-Test



Figure A-47. Seat Anchor, Left Front Seat, Pre-Test

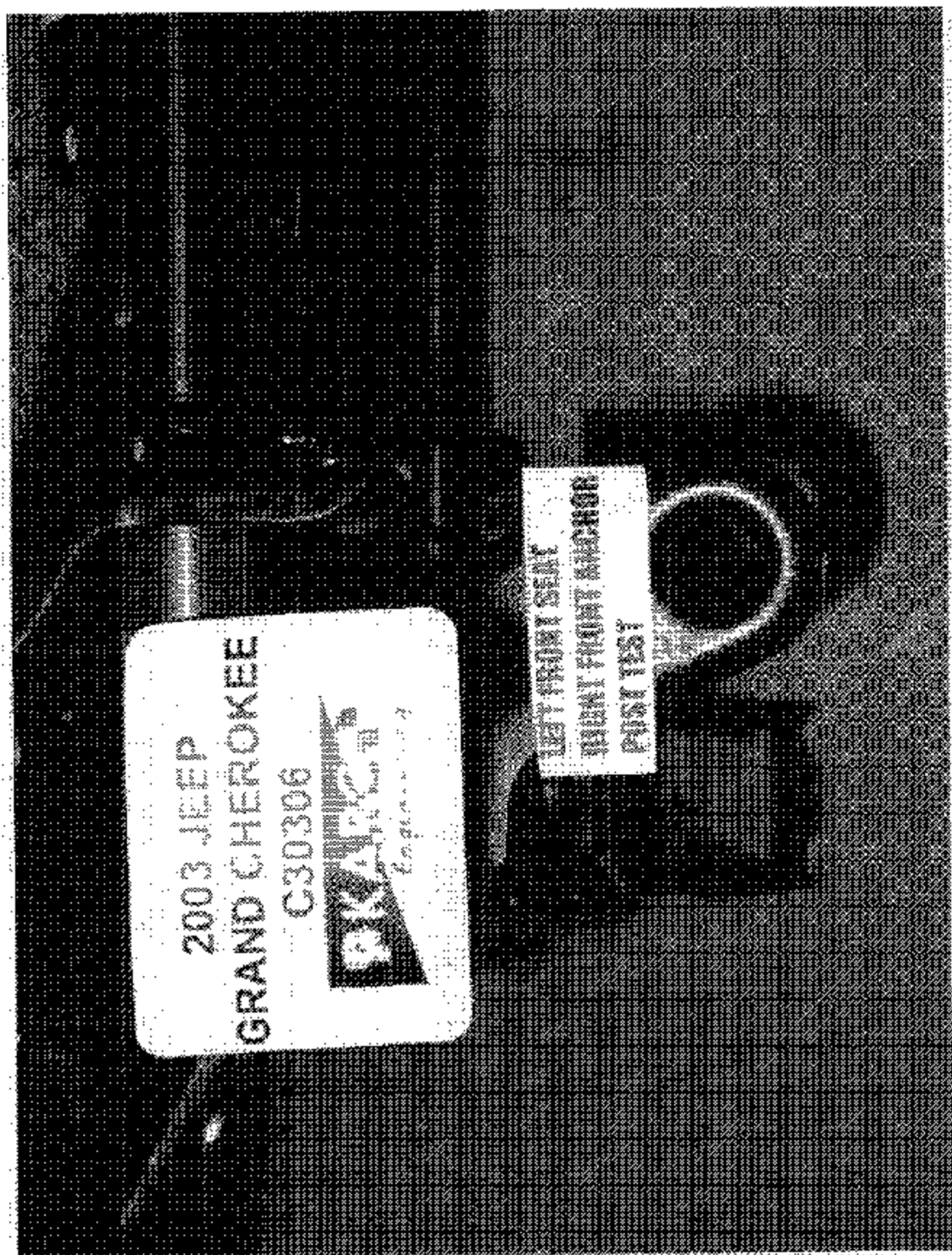


Figure A-48: Seat Anchor, Left Front Seat, Post-Test

LEFT FRONT SEAT

LEFT REAR ANCHOR

PRETEST

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Figure A-49: Floor Pan Anchor, Left Front Seat, Pre-Test

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LEFT FRONT SEAT
LEFT REAR ANCHOR
POST TEST

Figure A-50 Floor Pan Anchor, Left Front Seat, Post-Test

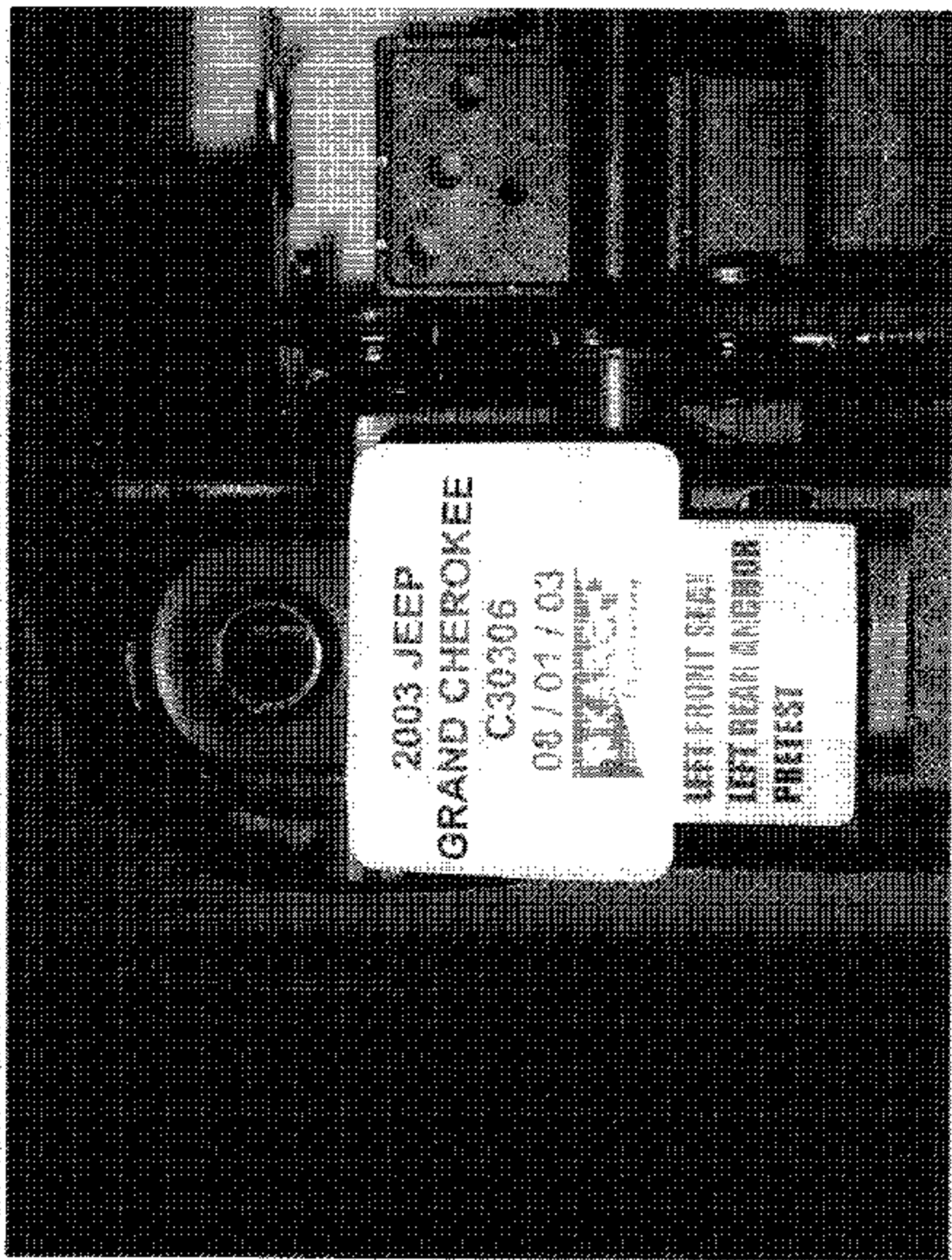


Figure A-51: Seal Anchor, Left Front Seat, Pre-Test

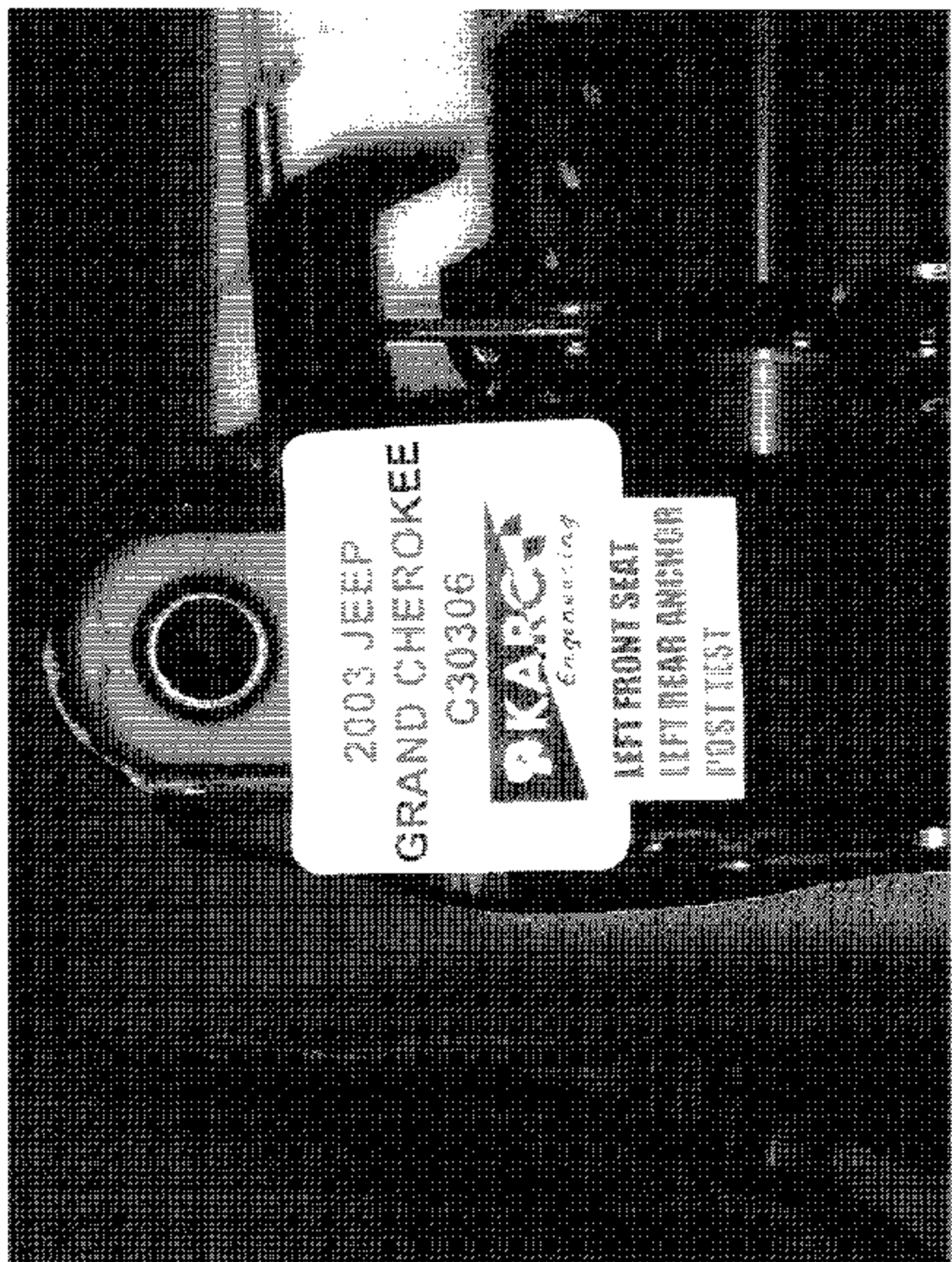


Figure A-52: Seat Anchor, Left Front Seat, Post-Test



Figure A-53: Floor Pan Anchor, Left Front Seal, Pre-Test

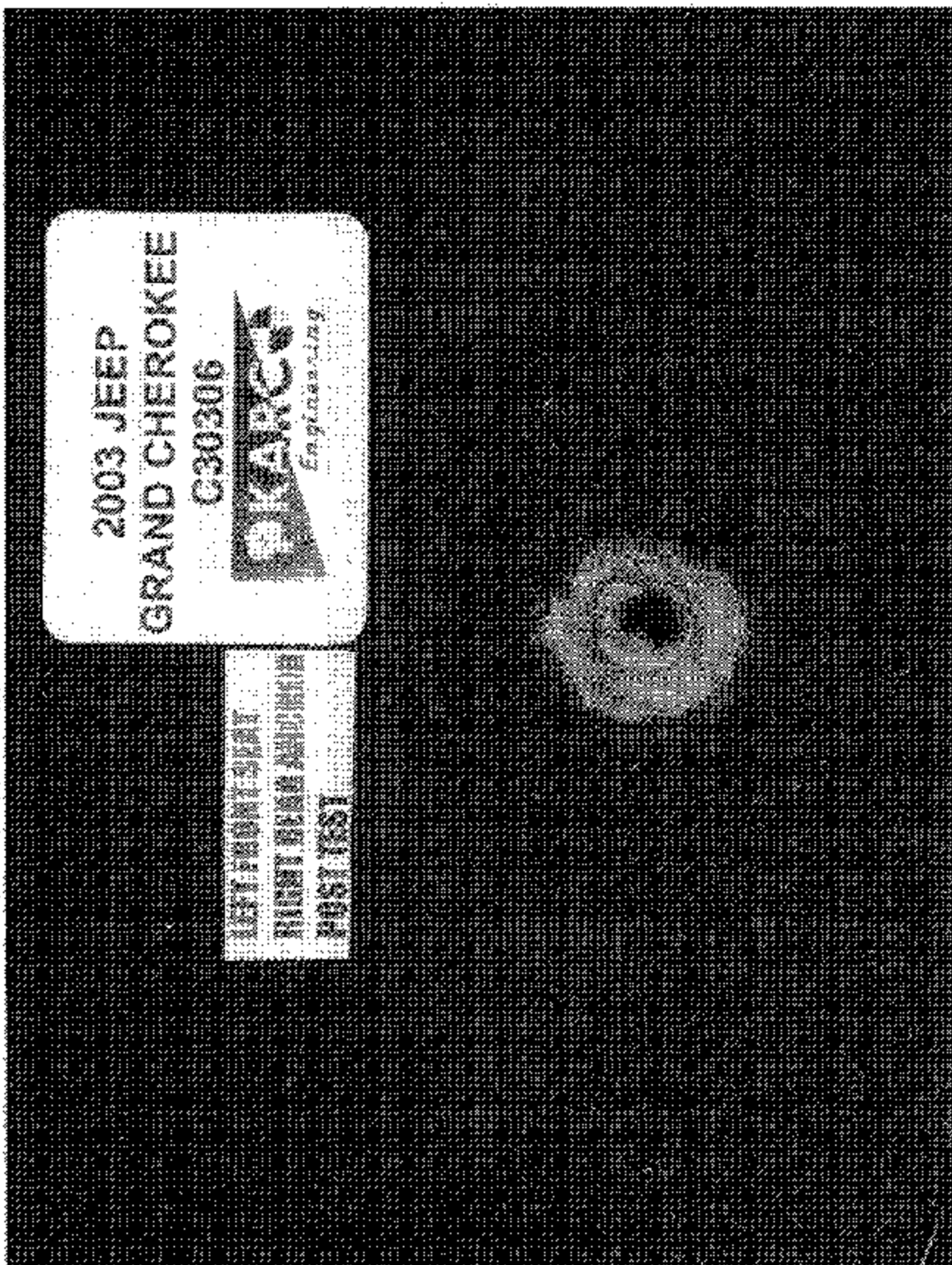


Figure A-54: Floor Pan Anchor, Left Front Seat, Post Test

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EXPANCT

LEFT FRONT SEAT
RIGHT REAR ANCHOR
PRETEST

Figure A-55: Seat Anchor, Left Front Seat, Pre-Test

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LEFT FRONT SEAT
RIGHT REAR ANCHOR
POST TEST

Figure A-56: Seat Anchor, Left Front Seat, Post-Test

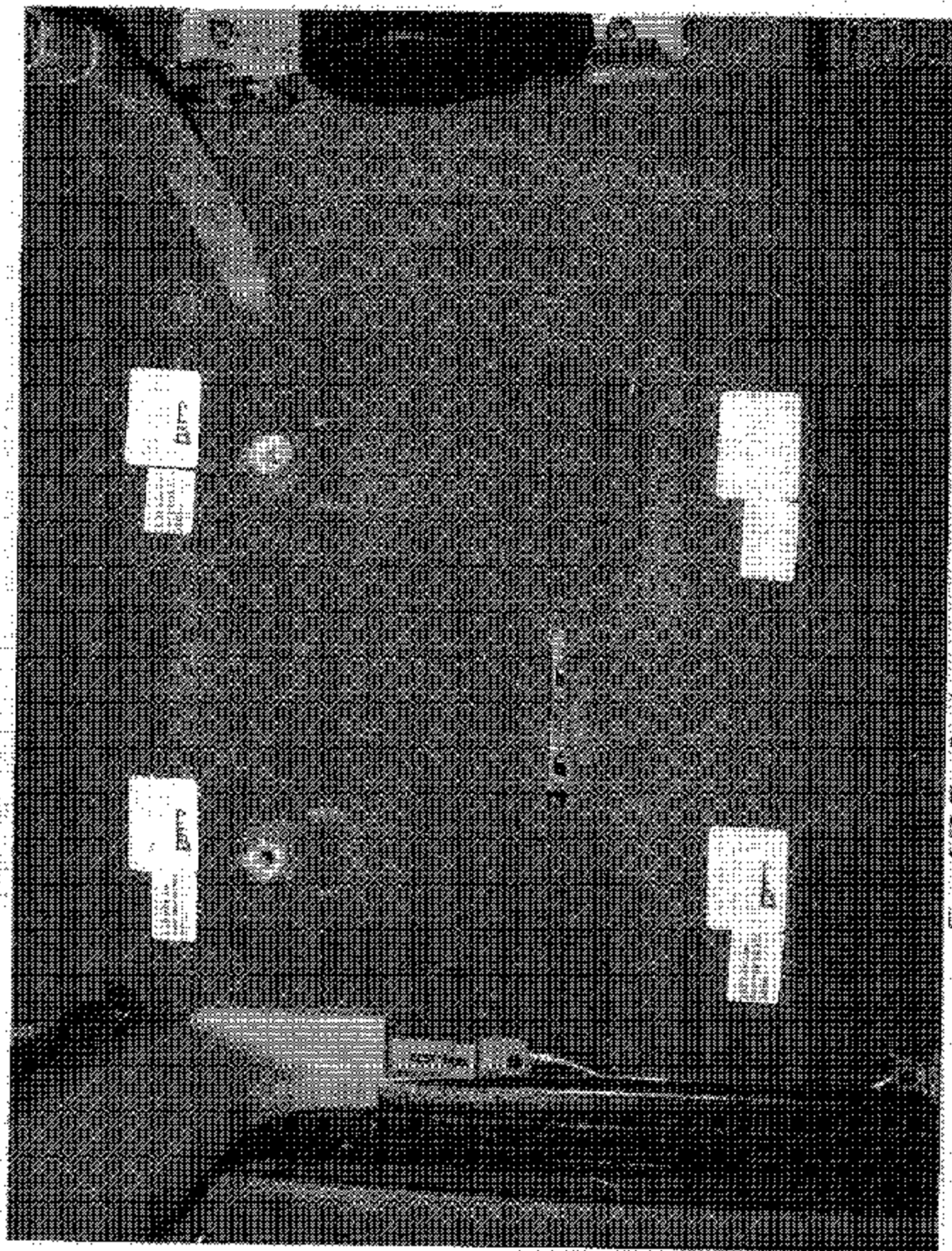


Figure A-57: Floor Pan Anchors, Right Front Seat Overall, Pre-Test

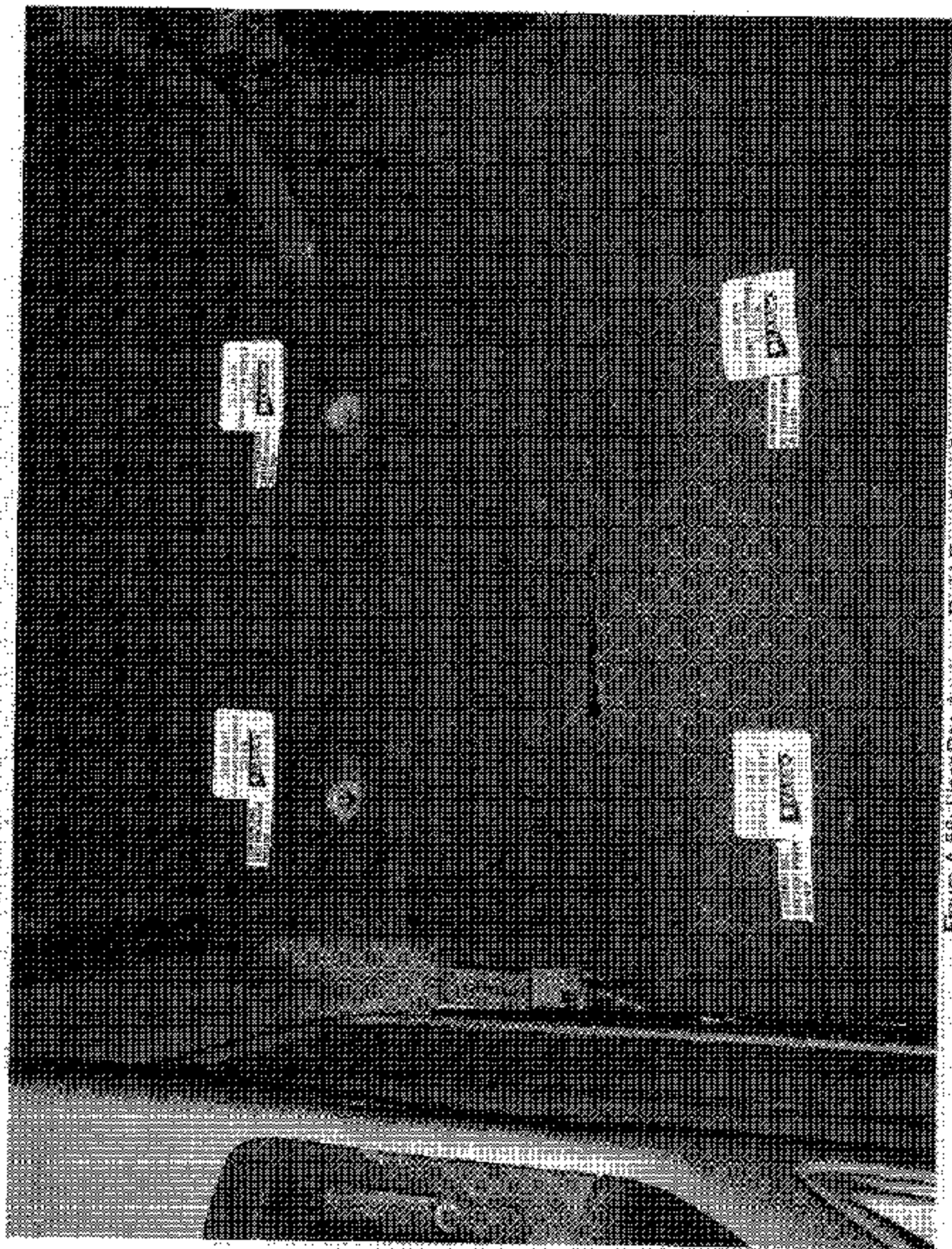


Figure A-58: Floor Pan Anchors, Right Front Seal Overall, Post-Test

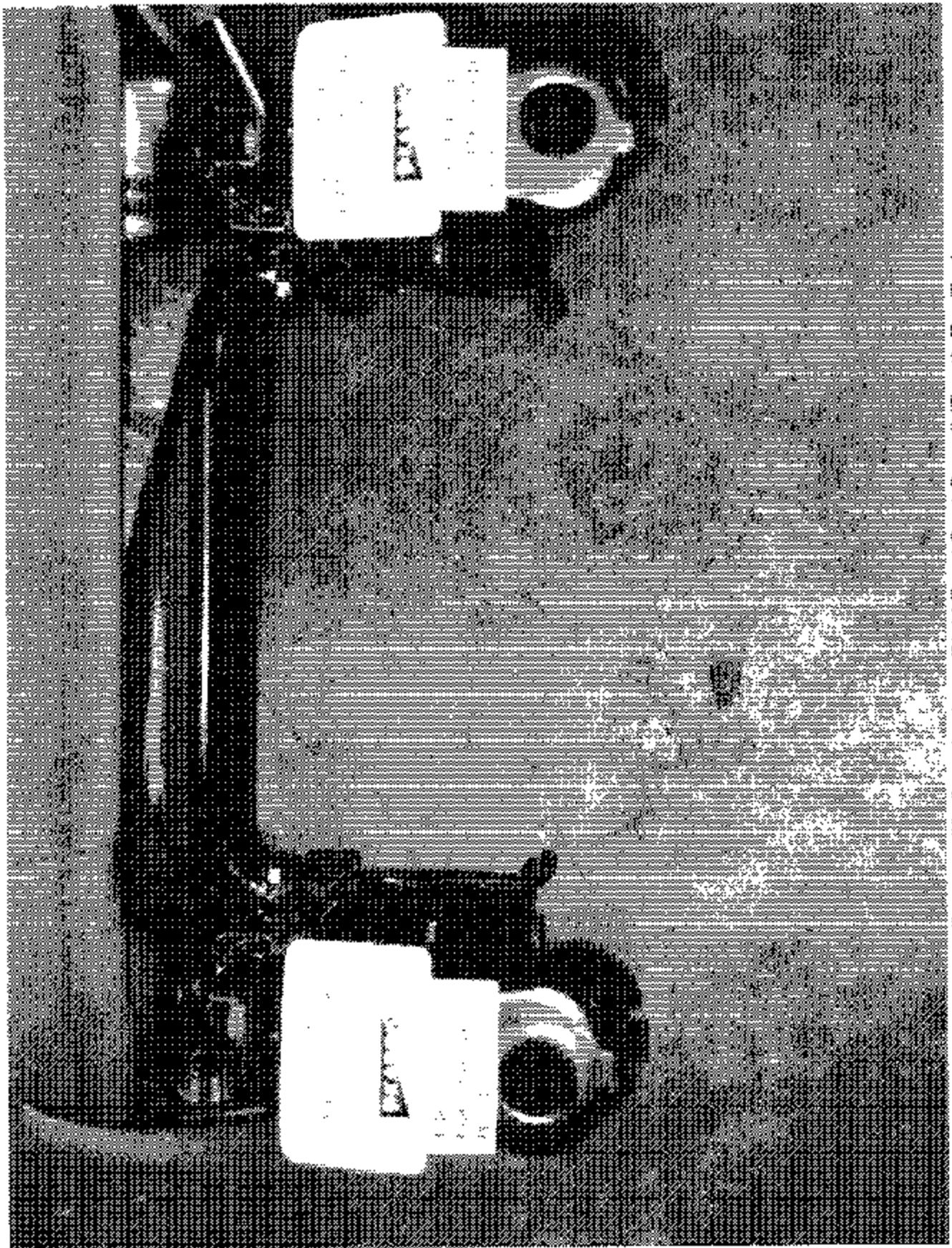


Figure A-59: Seat Anchors, Right Front Seat Overall (Front), Pre-Test

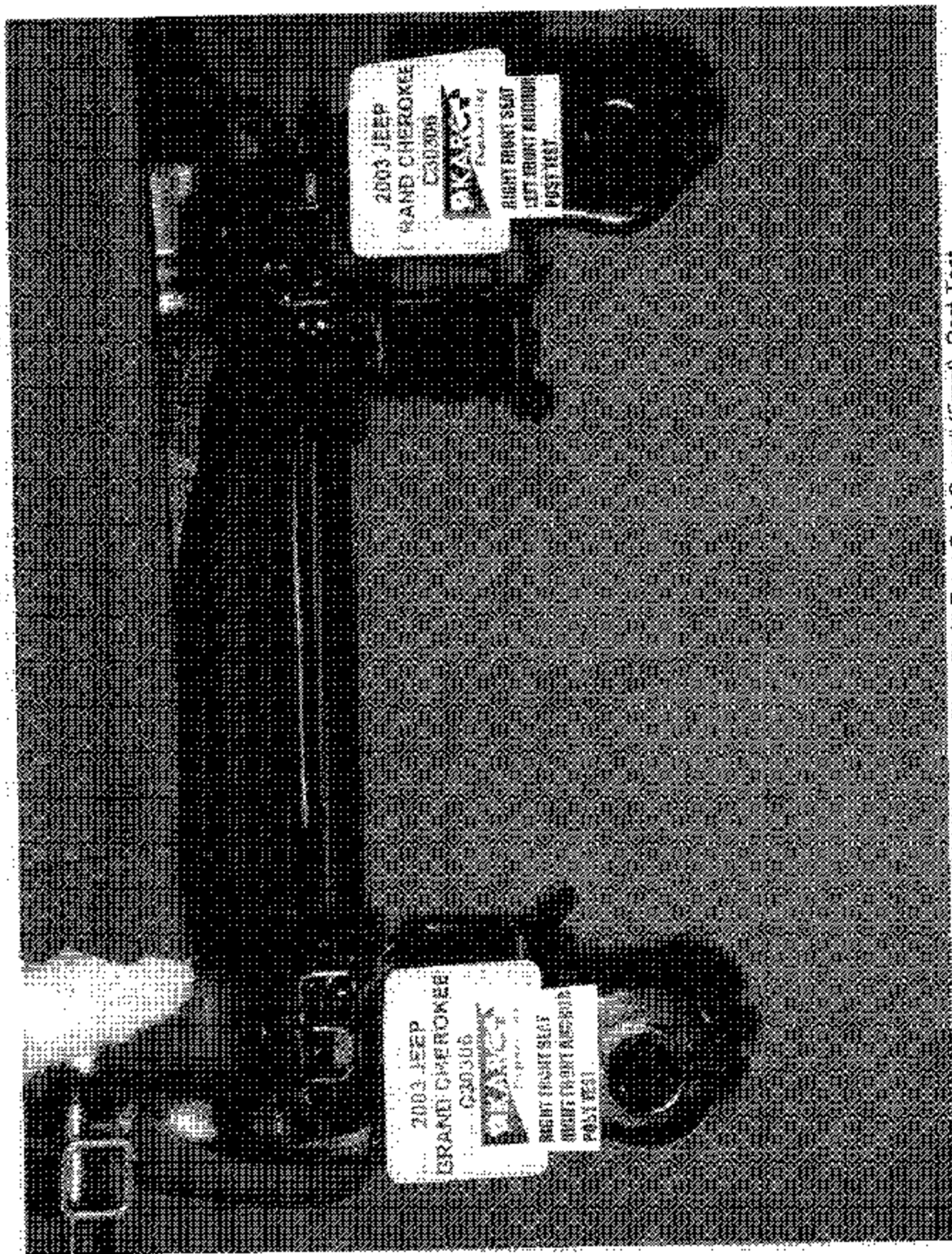


Figure A-60: Seat Anchors, Right Front Seat Overall (Front), Post-Test

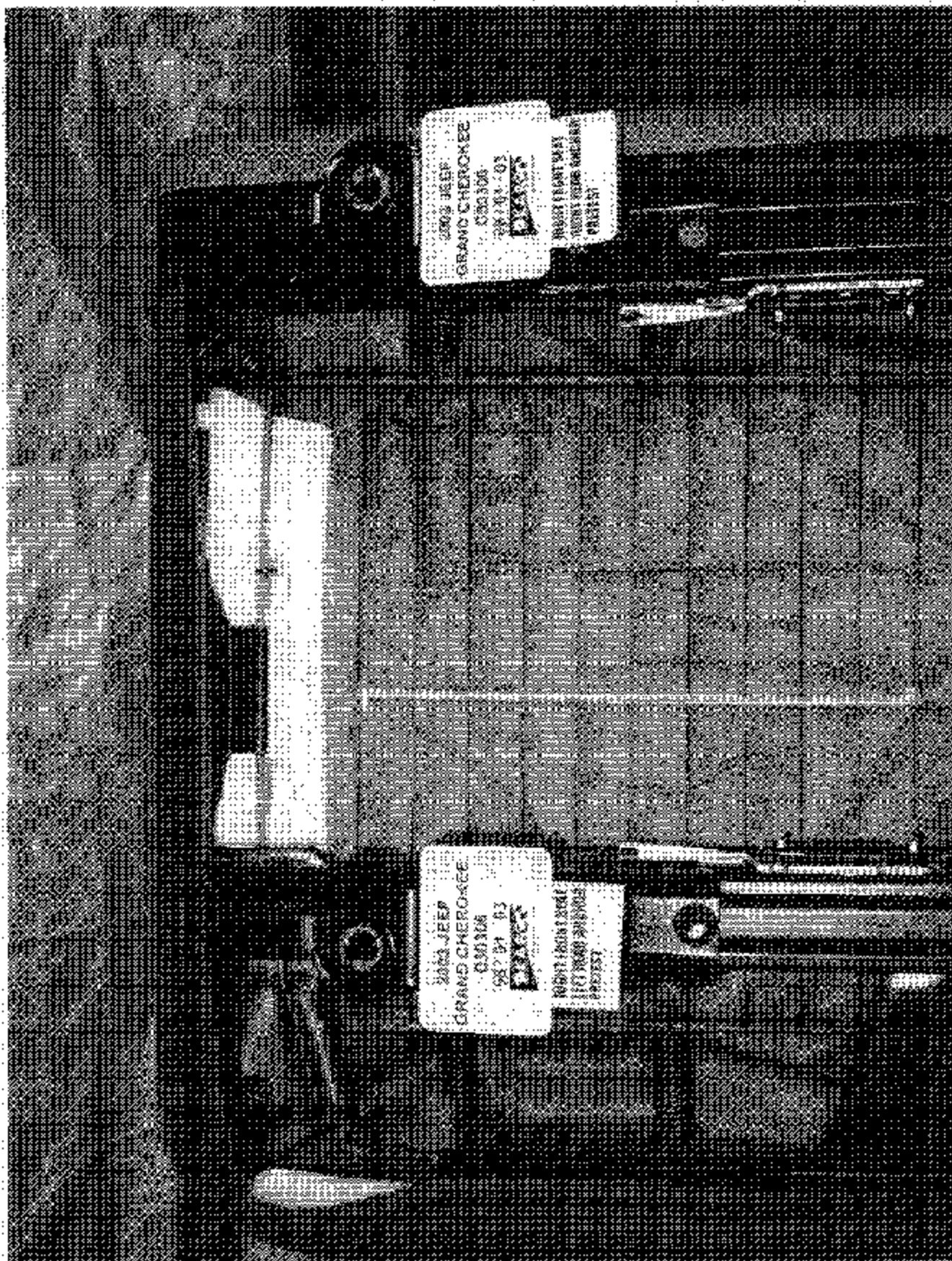


Figure A-51: Seat Anchors, Right Front Seat Overall (Rear), Pre-Test

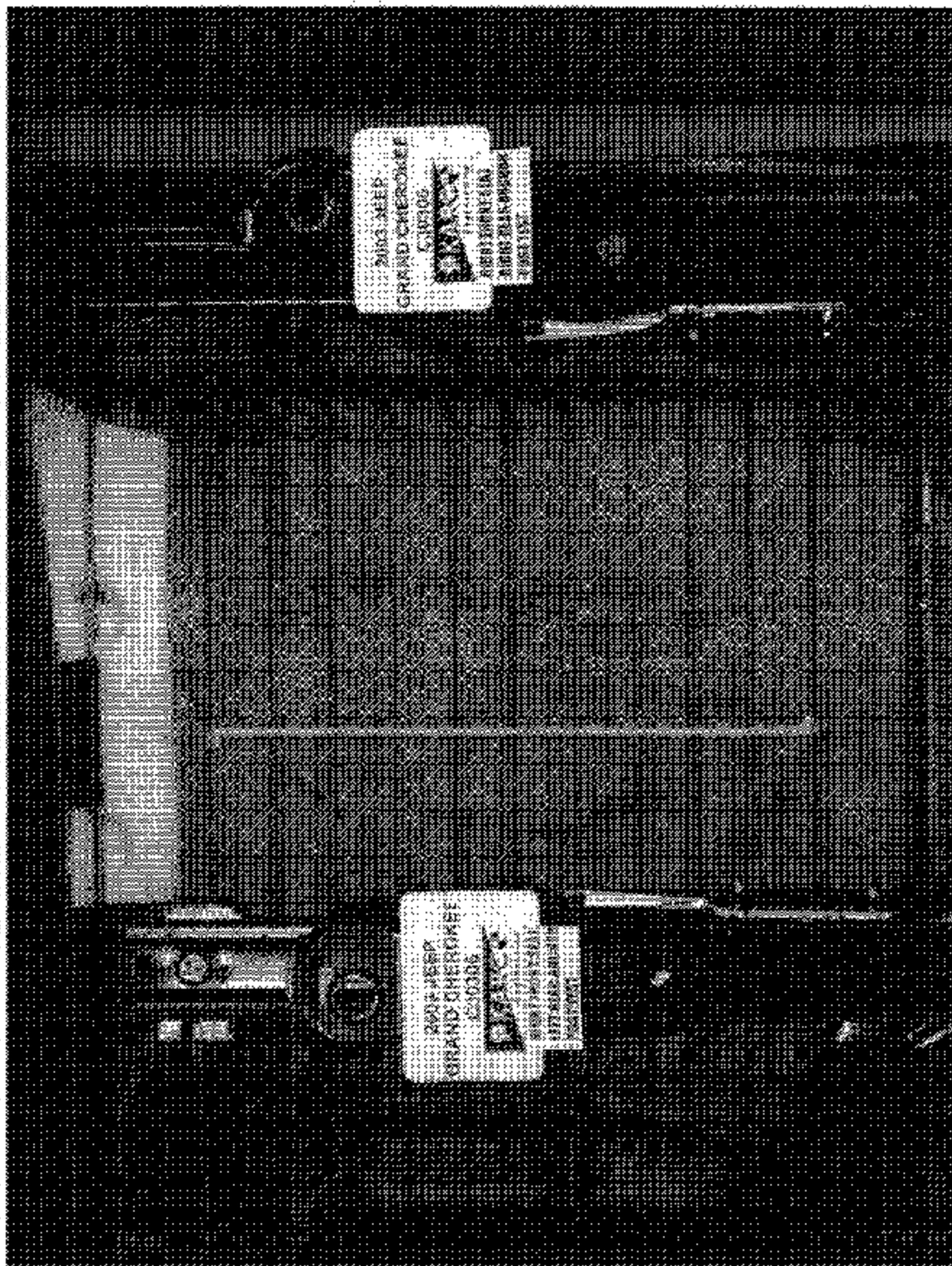


Figure A-62. Seat Anchors, Right Front Seat Overall (Rear), Post-Test

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SKARCO
Engineering

RIGHT FRONT SEAT
LEFT FRONT ANCHOR
PRETEST

Figure A-63: Floor Pan Anchor, Right Front Seat, Pre-Test

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RIGHT FRONT SEAT
LEFT FRONT ANCHOR
POST TEST

Figure A-64: Floor Pan Anchor, Right Front Seat, Post-Test

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RIGHT FRONT SEAT
LEFT FRONT ANCHOR
PRETEST

Figure A-65: Seal Anchor, Right Front Seat, Pre-Test



Figure A-66: Seat Anchor, Right Front Seat, Post-Test

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RIGHT FRONT SEAT

RIGHT FRONT ANCHOR

PRETEST

Figure A-67: Floor Pan Anchor, Right Front Seat, Pre-Test

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RIGHT FRONT SEAT
RIGHT FRONT ANCHOR
POST TEST

Figure A-66: Floor Pan Anchor, Right Front Seat, Post-Test

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PKARCO
Engineering

RIGHT FRONT SEAT
RIGHT FRONT ANCHOR
PRETEST

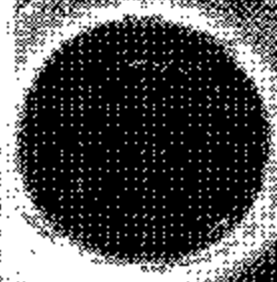


Figure A-69: Seat Anchor, Right Front Seat, Pre-Test

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RIGHT FRONT SEAT
RIGHT FRONT ANCHOR
POST TEST

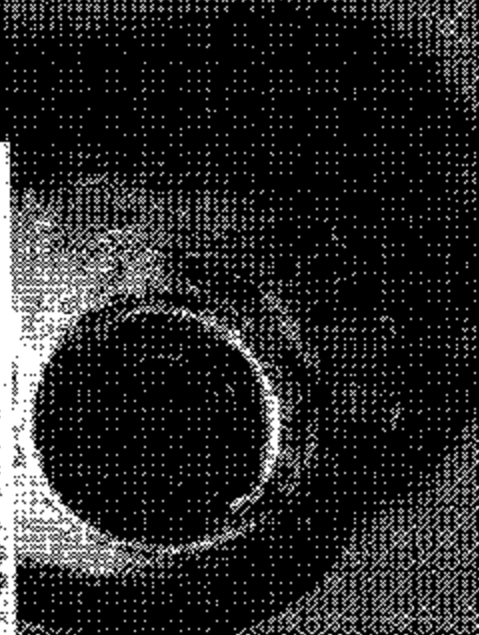


Figure A-70: Seal Anchor, Right Front Seal, Post-Test

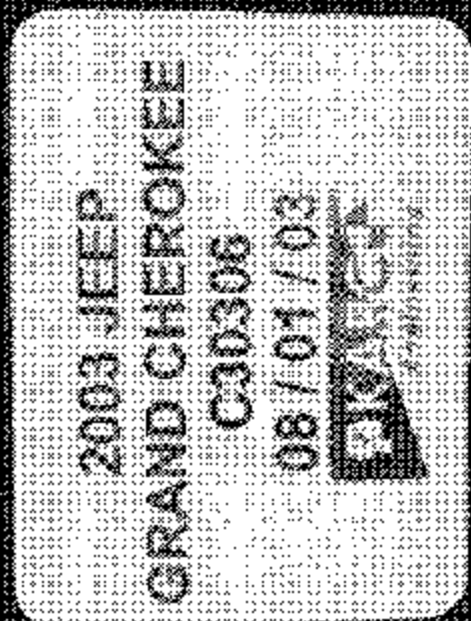


Figure A-71: Floor Pan Anchor, Right Front Seat, Pre-Test

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RIGHT FRONT SEAT
LEFT REAR ANCHOR
POST TEST

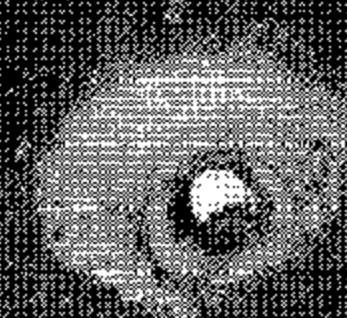


Figure A-72: Floor Pan Anchor, Right Front Seat, Post-Test

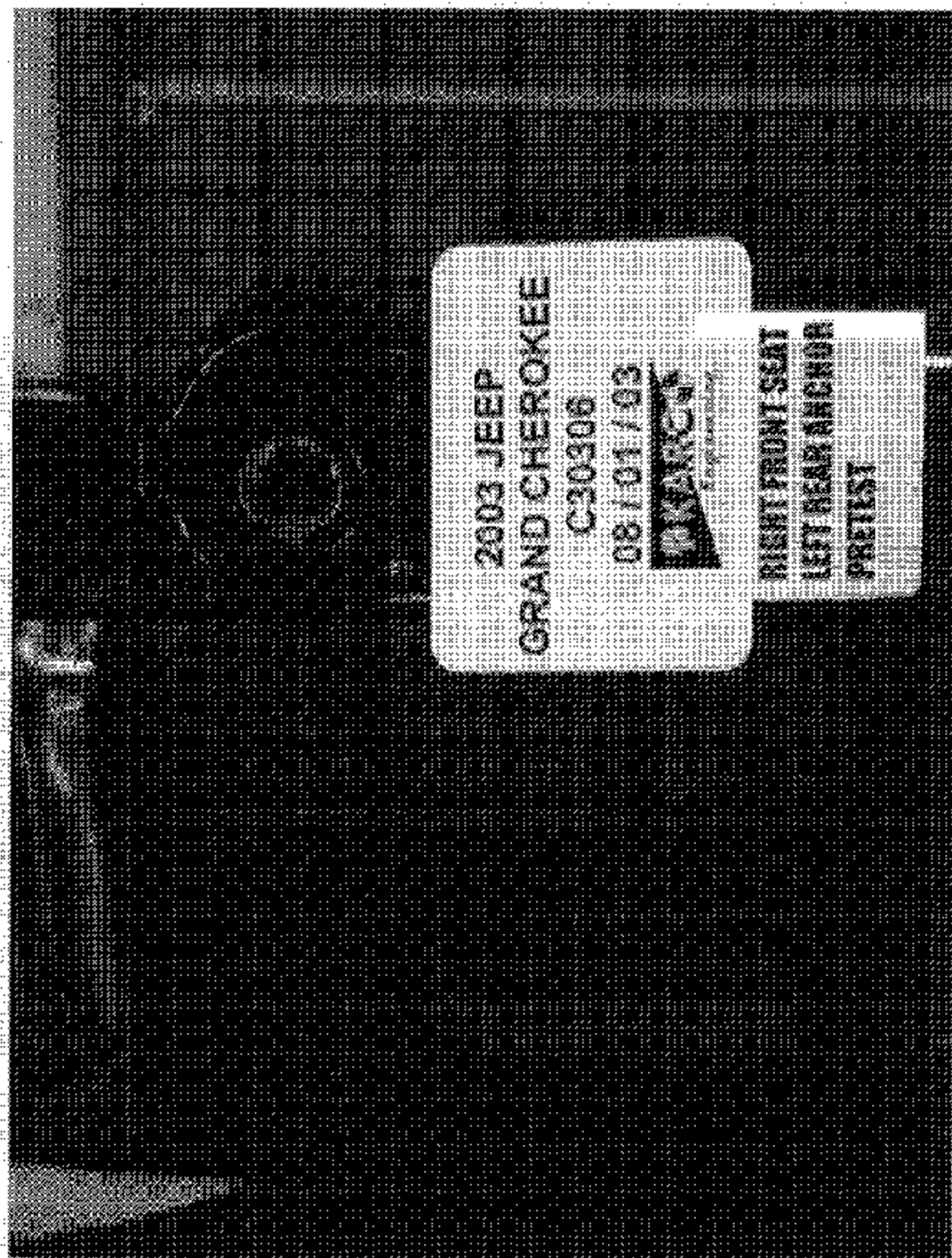


Figure A-73: Seat Anchor, Right Front Seat, Pre-Test

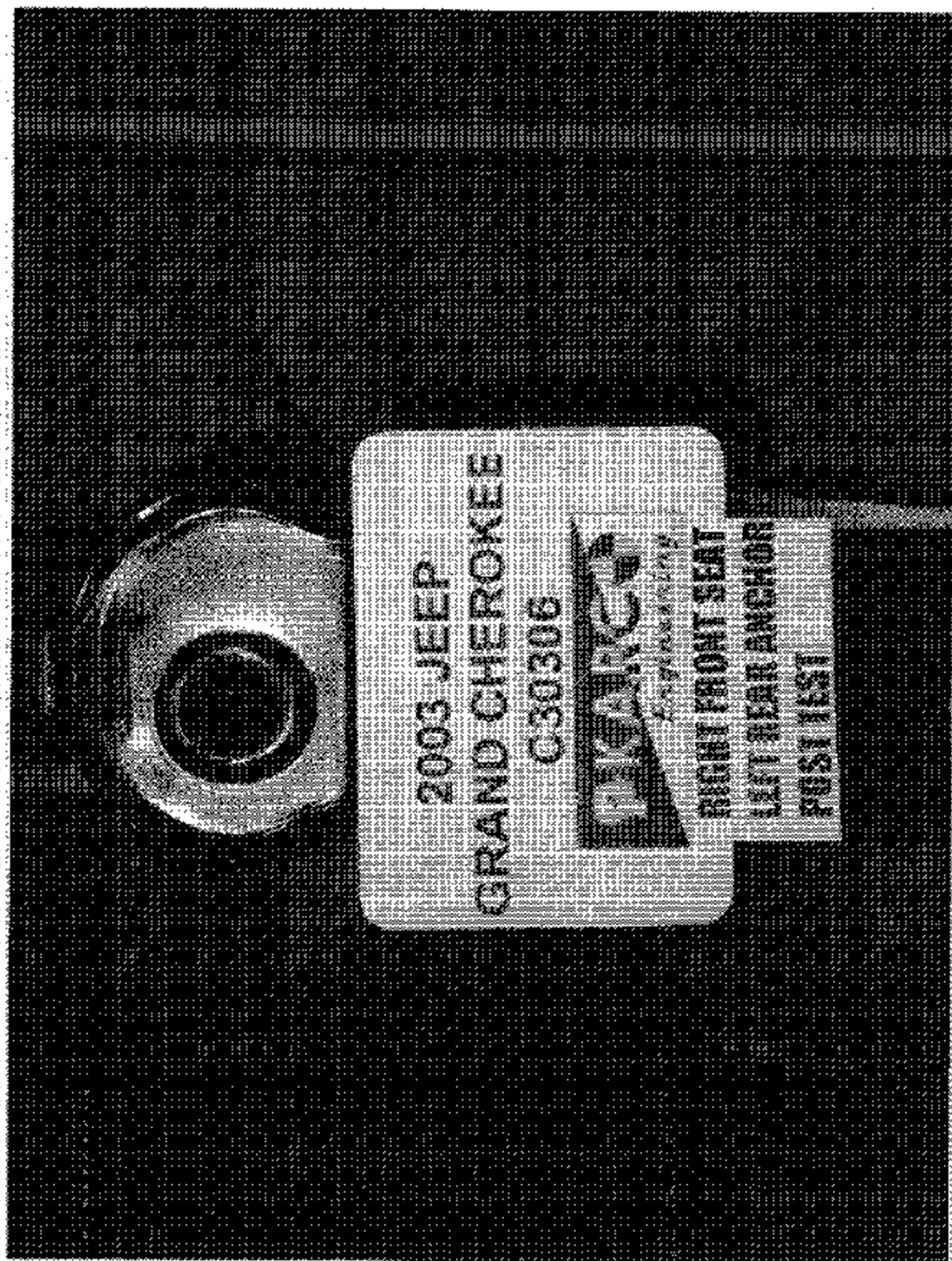


Figure A-74: Seat Anchor, Right Front Seat, Post-Test

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RIGHT FRONT SEAT
RIGHT REAR SEAT
PRETEST

Figure A-75: Floor Pan Anchor, Right Front Seat, Pre-Test

2003 JEEP
GRAND CHEROKEE

C30306



RIGHT FRONT SEAT
RIGHT REAR SEAT
POST TEST

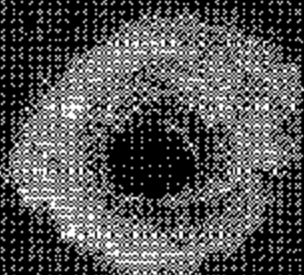


Figure A-76: Floor Pan Anchor, Right Front Seat, Post-Test

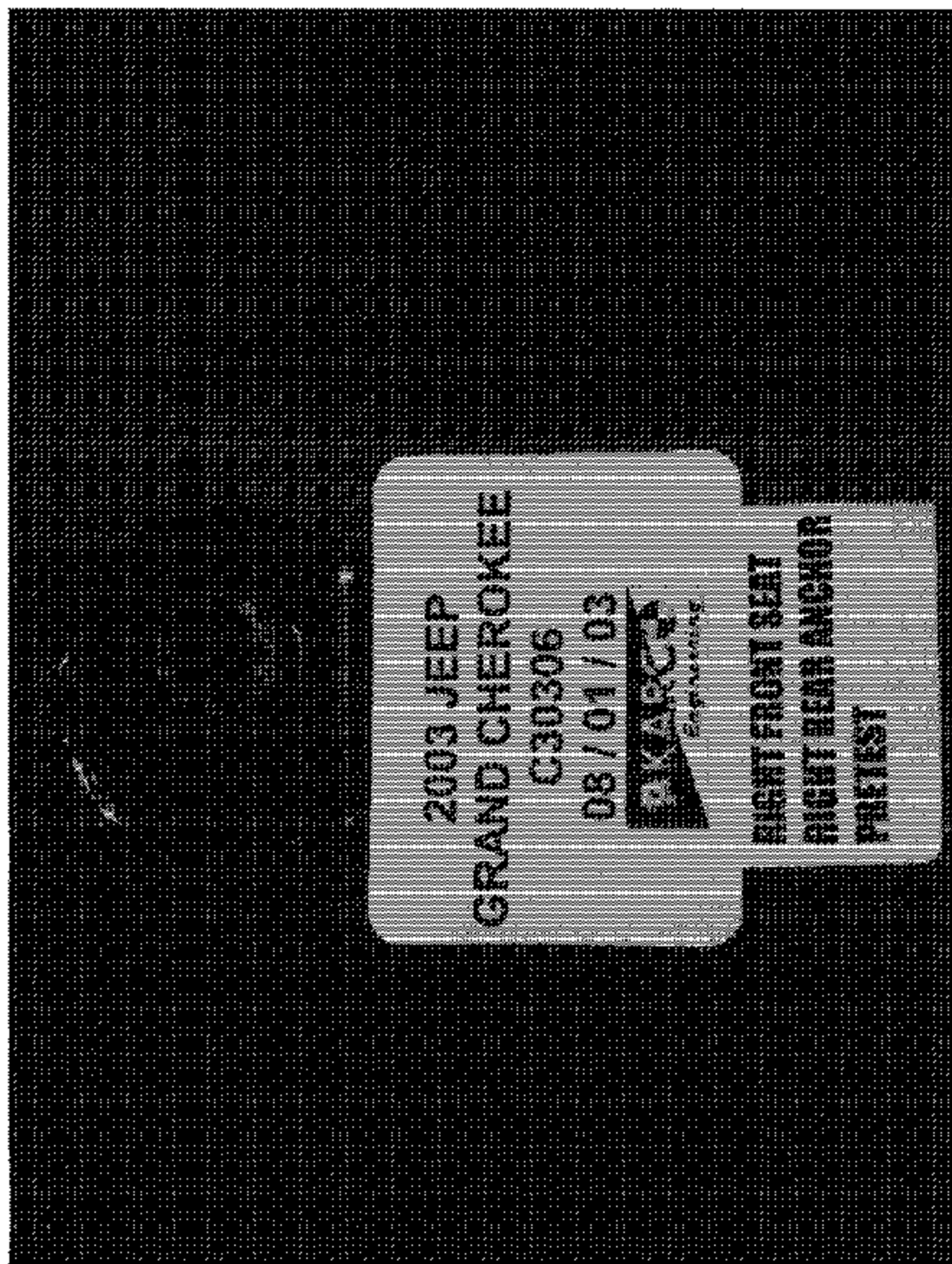


Figure A-77: Seat Anchor, Right Front Seat, Pre-Test

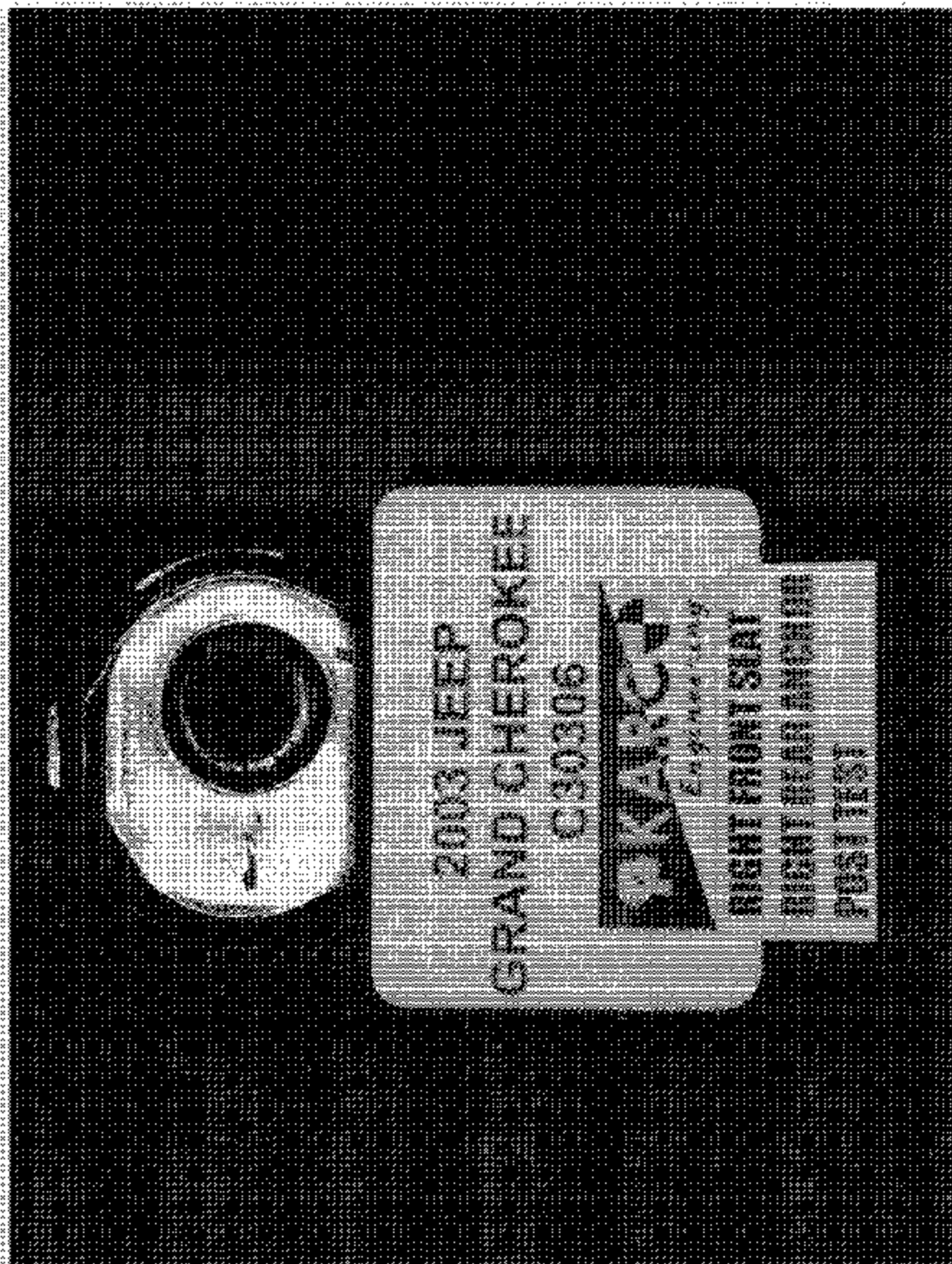


Figure A-78: Seat Anchor, Right Front Seat, Post-Test

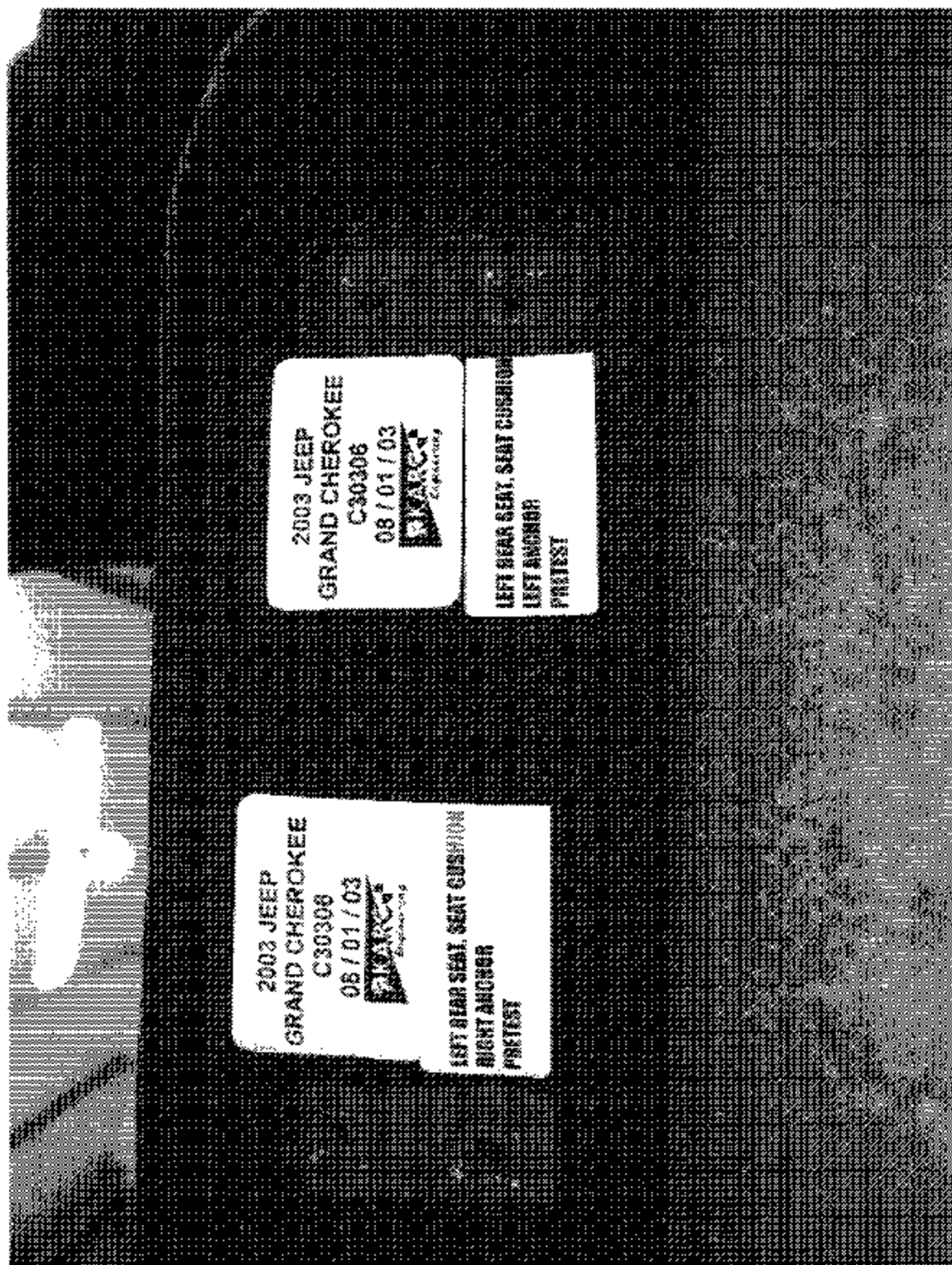


Figure A-79: Floor Pan Anchors, Left Rear Seat, Seat Cushion Overall, Pre-Test

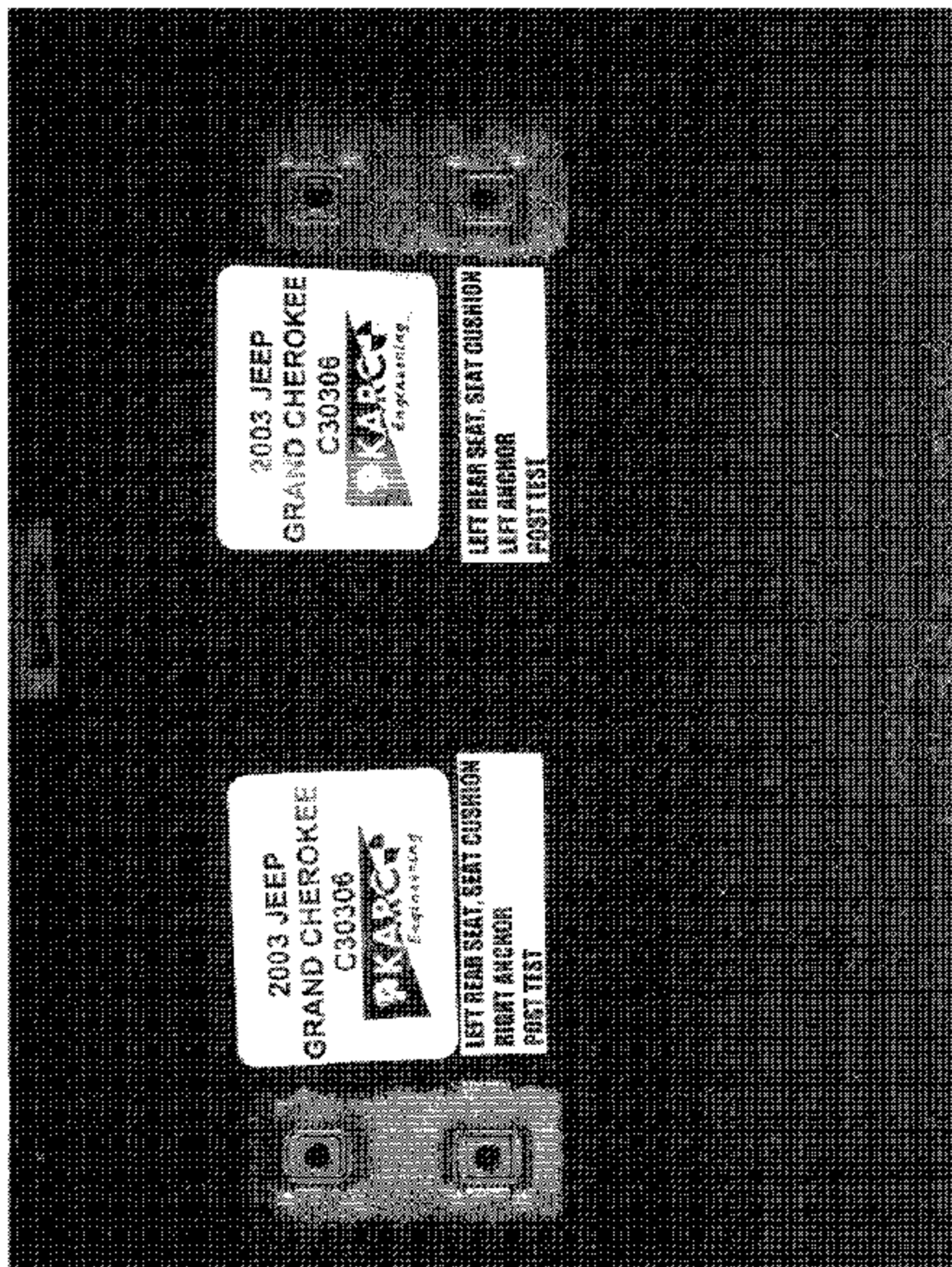


Figure A-80: Floor Pan Anchors, Left Rear Seat, Seat Cushion Overall, Post-Test



Figure A-81: Seat Anchors, Left Rear Seat, Seat Cushion Overall, Pre-Test

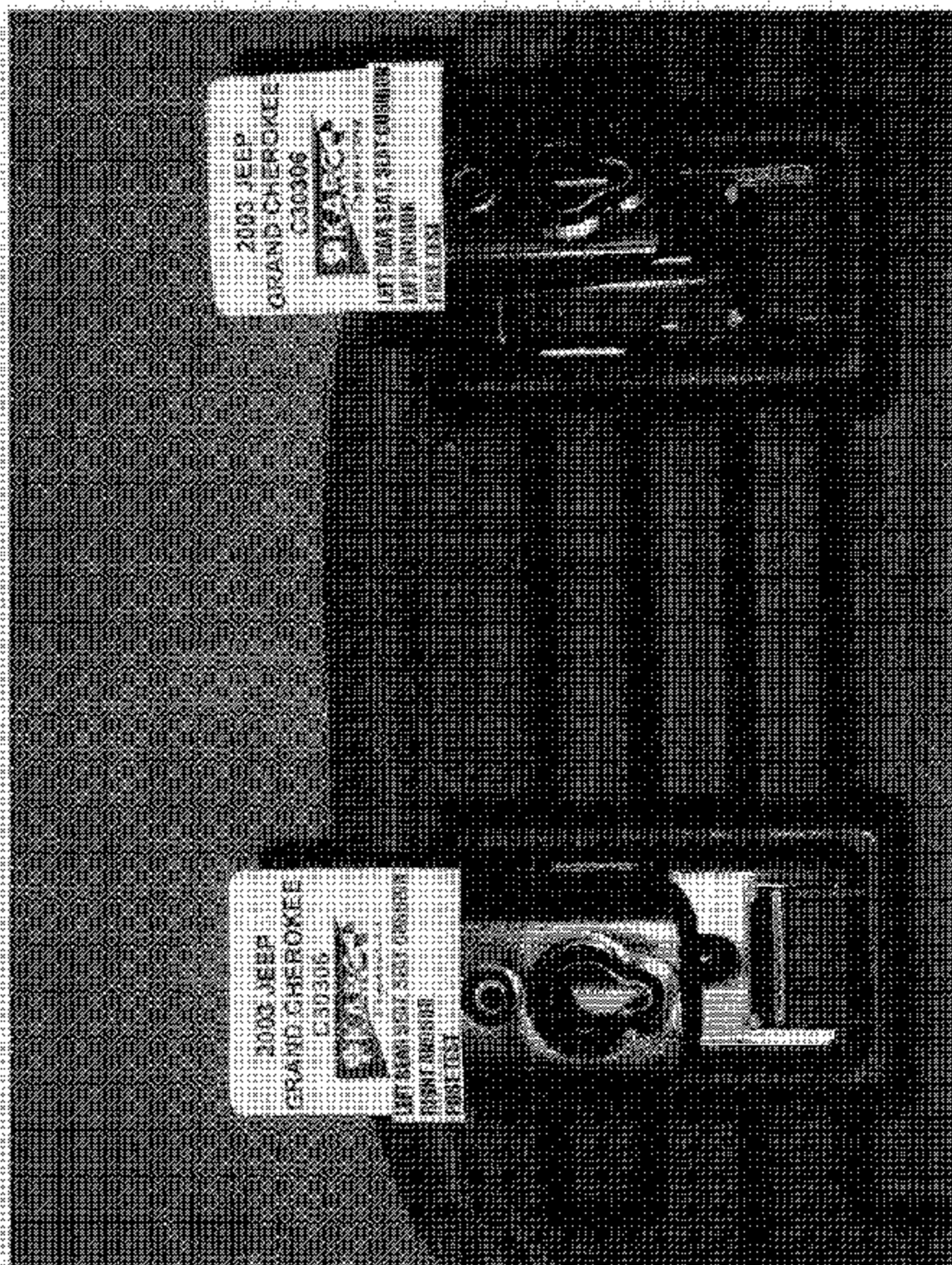


Figure A-82: Seat Anchors: Left Rear Seat, Seat Cushion Overall, Post-Test

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LEFT REAR SEAT, SEAT CUSHION

ANCHOR

PRE-TEST

Figure A-83: Floor Pan Anchor, Left Rear Seat, Seat Cushion, Pre-Test

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LEFT REAR SEAT, SEAT CUSHION
LEFT ANCHOR
POST TEST

Figure A-84: Floor Pan Anchor, Left Rear Seat, Seat Cushion, Post-Test



Figure A-85: Seat Anchor, Left Rear Seat, Seat Cushion, Pre-Test

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LEFT REAR SEAT, SEAT CUSHION

LEFT ANCHOR

POST TEST



Figure A-86: Seat Anchor, Left Rear Seat, Seat Cushion, Post-Test

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LEFT REAR SEAT SEAT CUSHION

RIGHT ANCHOR

PHOTO



Figure A-87: Floor Pan Anchor, Left Rear Seal, Seat Cushion, Pre-Test

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LEFT REAR SEAT, SEAT CUSHION
RIGHT ANCHOR
POST TEST

Figure A-88: Floor Pan Anchor, Left Rear Seat, Seat Cushion, Post-Test

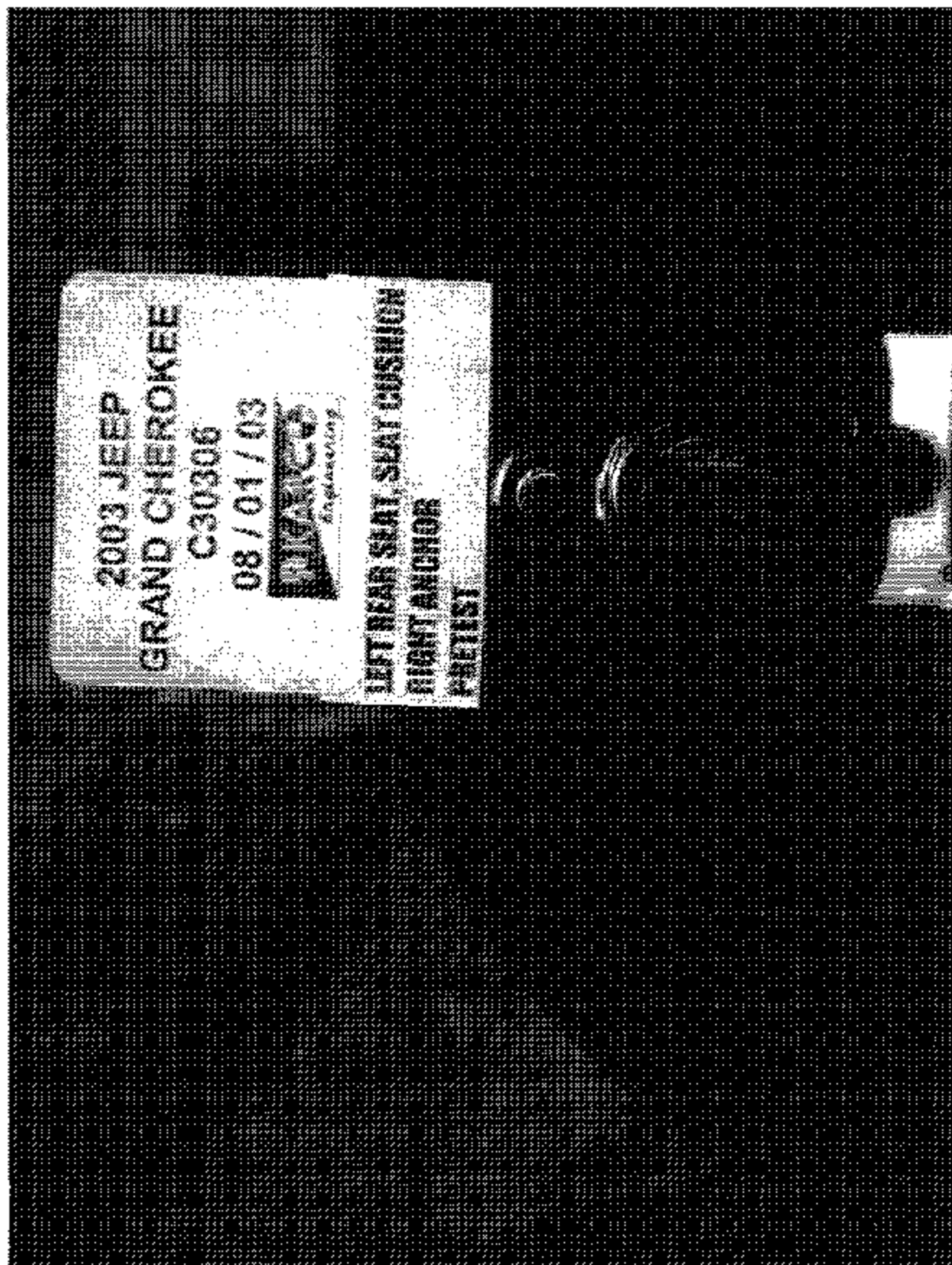


Figure A-69: Seat Anchor, Left Rear Seat, Seat Cushion, Pre-Test

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LEFT REAR SEAT, SEAT CUSHION
RIGHT ANCHOR
POST TEST



Figure A-90: Seat Anchor, Left Rear Seat, Seat Cushion, Post-Test

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LEFT REAR SEAT, SEAT BACK
LEFT ANCHOR
PRETEST

Figure A-91: Floor Pan Anchor, Left Rear Seat, Seat Back, Pre-Test



Figure A-92: Floor Pan Anchor, Left Rear Seat, Seat Back, Post-Test



Figure A-93: Seat Anchor, Left Rear Seat, Seat Back, Pre-Test

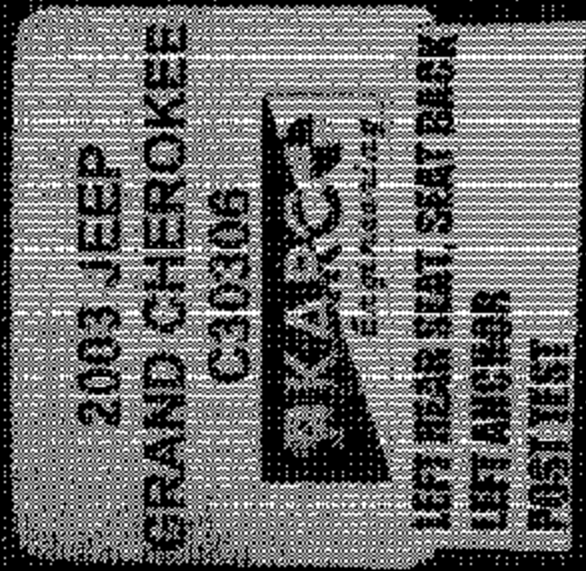


Figure A-94: Seat Anchor, Left Rear Seat, Seat Back, Post-Test

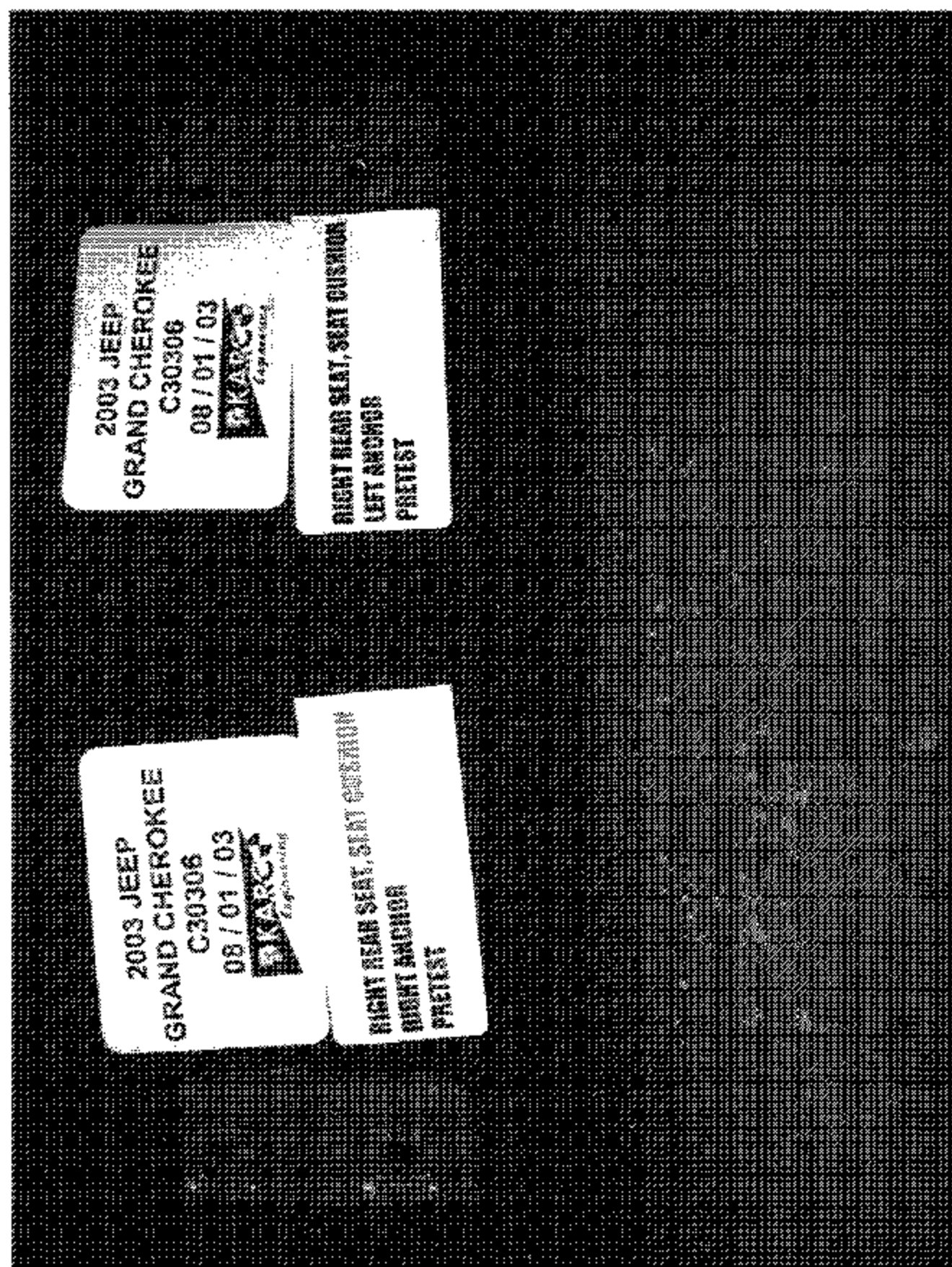


Figure A-95: Floor Pan Anchors, Right Rear Seat, Seat Cushion Overall, Pre-Test

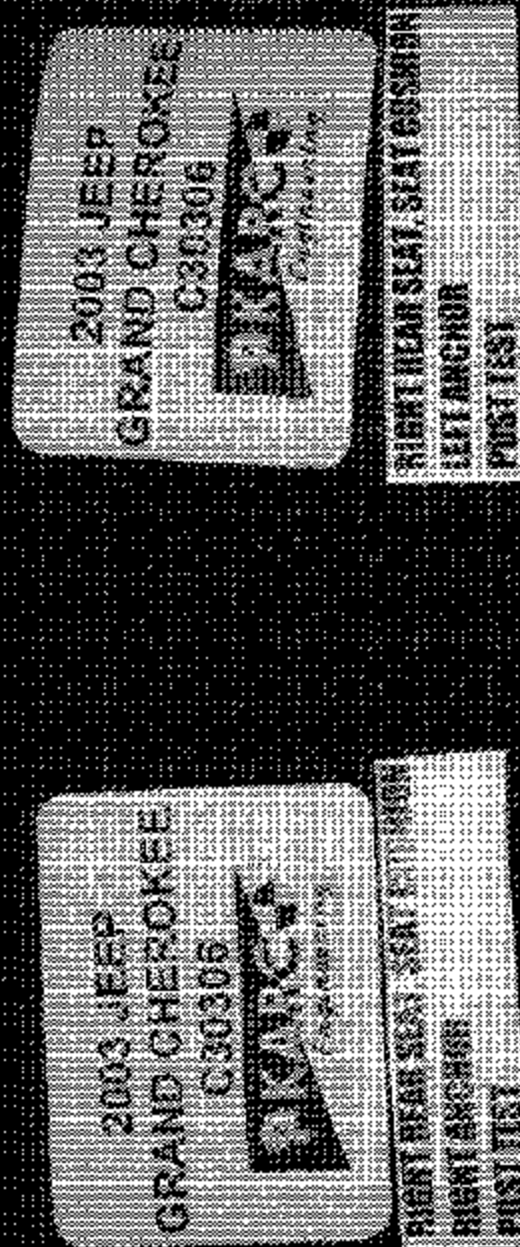


Figure A-96: Floor Pan Anchors; Right Rear Seat; Seat Cushion Overall; Post-Test



Figure A-97: Seat Anchors, Right Rear Seat, Seat Cushion Overall, Pre-Test

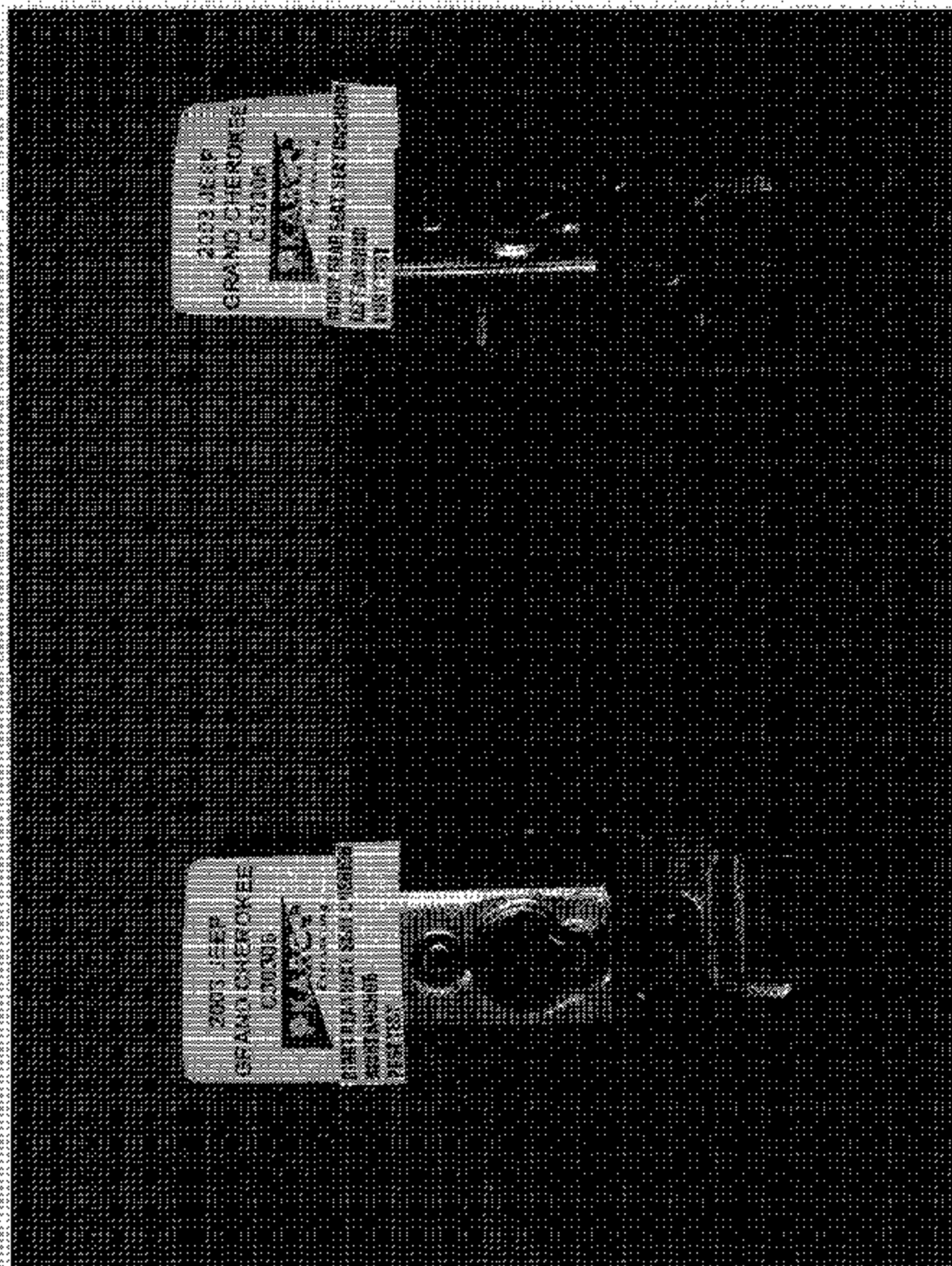


Figure A-98: Seat Anchors, Right Rear Seat, Seat Cushion Overall, Push-Test

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RIGHT REAR SEAT, SEAT CUSHION

LEFT ANCHOR

PRETEST

Figure A-99: Floor Pan Anchor, Right Rear Seat, Seat Cushion, Pre-Test

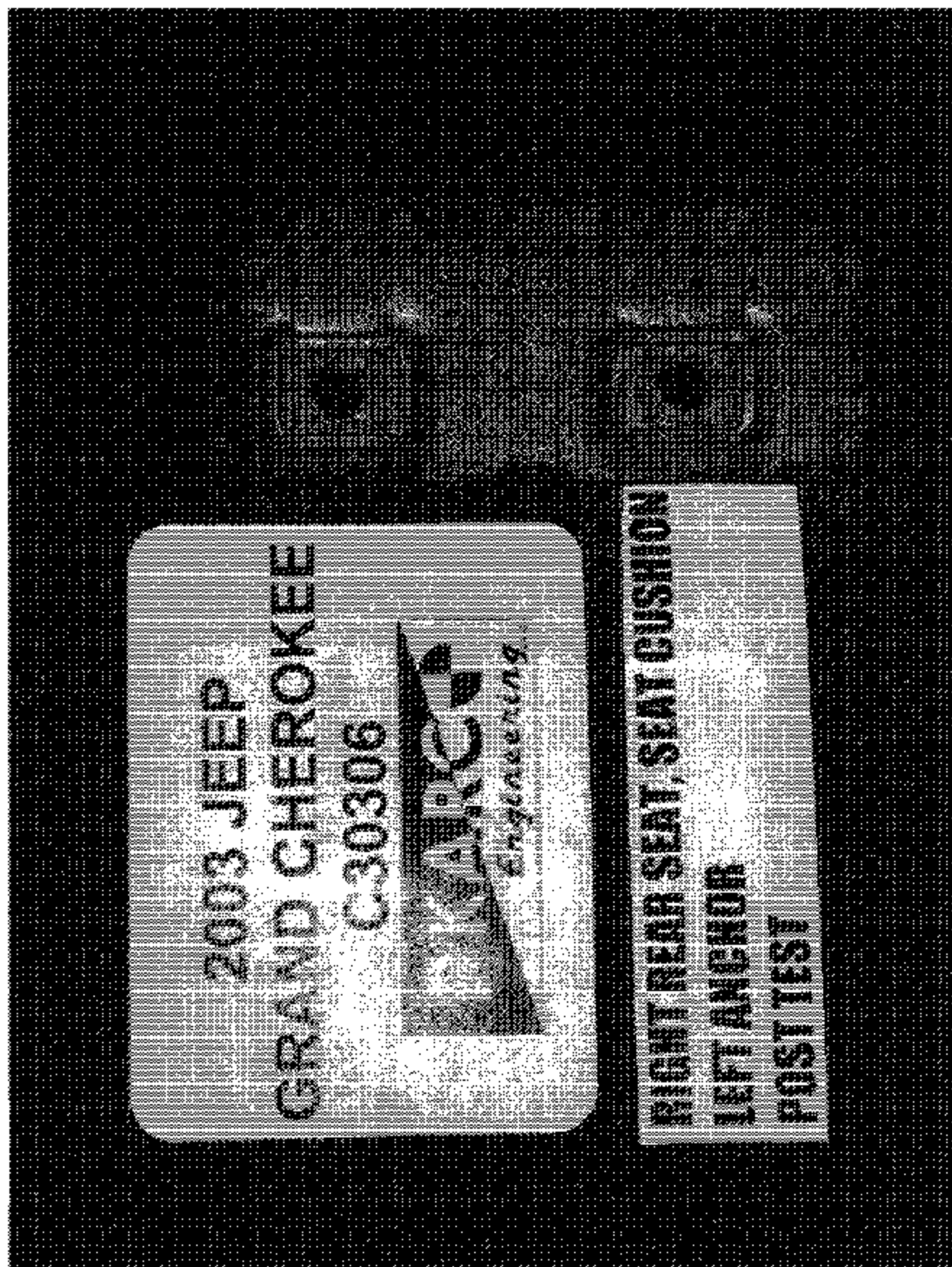


Figure A-100: Floor Pan Anchor, Right Rear Seat, Seat Cushion, Post-Test

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RIGHT REAR SEAT, SEAT CUSHION
LEFT ANCHOR
PRETEST

Figure A-101: Seat Anchor, Right Rear Seat, Seat Cushion, Pre-Test



Figure A-102: Seat Anchor, Right Rear Seat, Seat Cushion, Post-Test

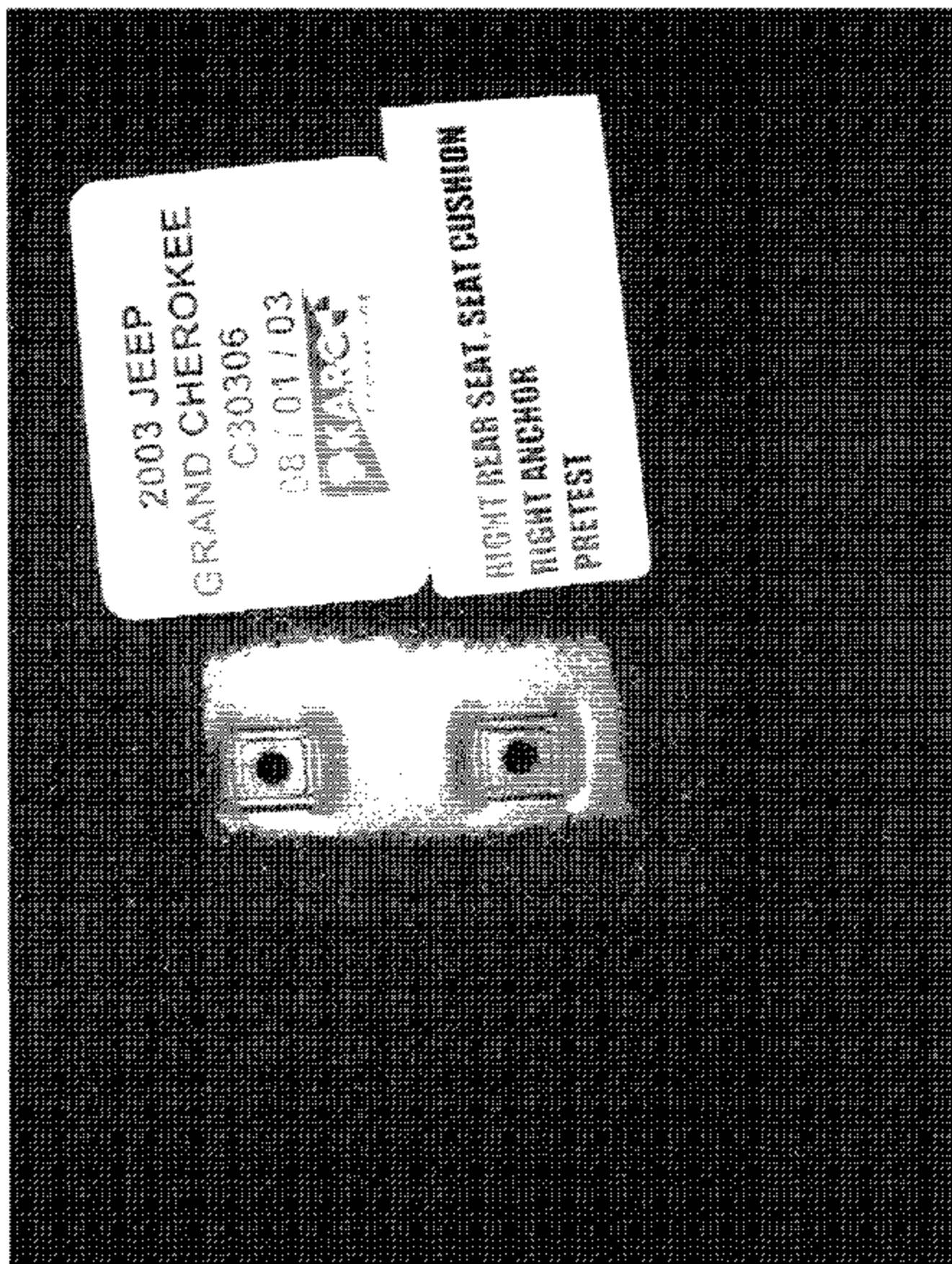


Figure A-103: Floor Pan Anchor, Right Rear Seat, Seat Cushion, Pre-Test

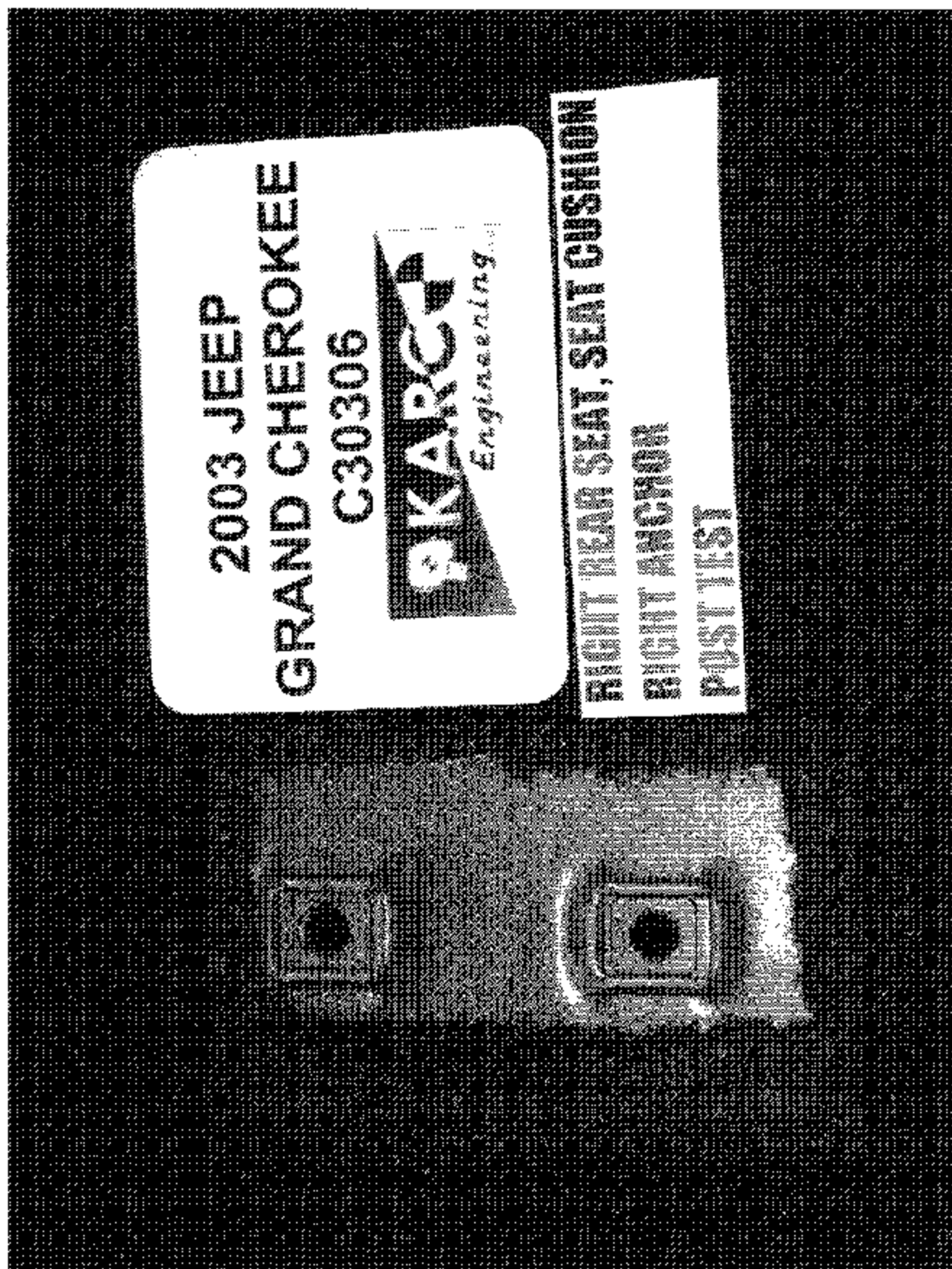


Figure A-104: Floor Pan Anchor, Right Rear Seat, Seat Cushion, Post-Test

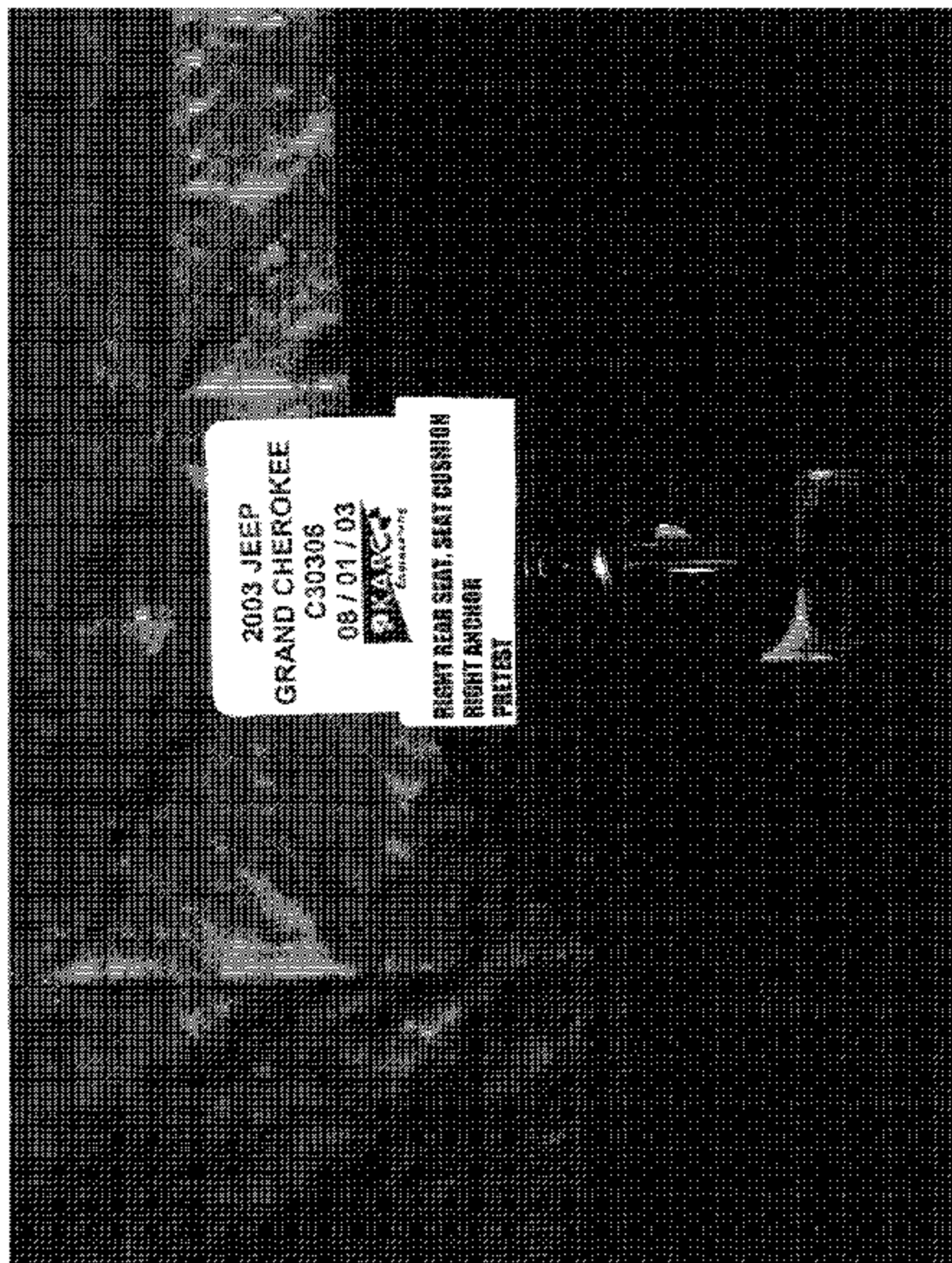


Figure A-105: Seat Anchor, Right Rear Seat, Seat Cushion, Pre-Test

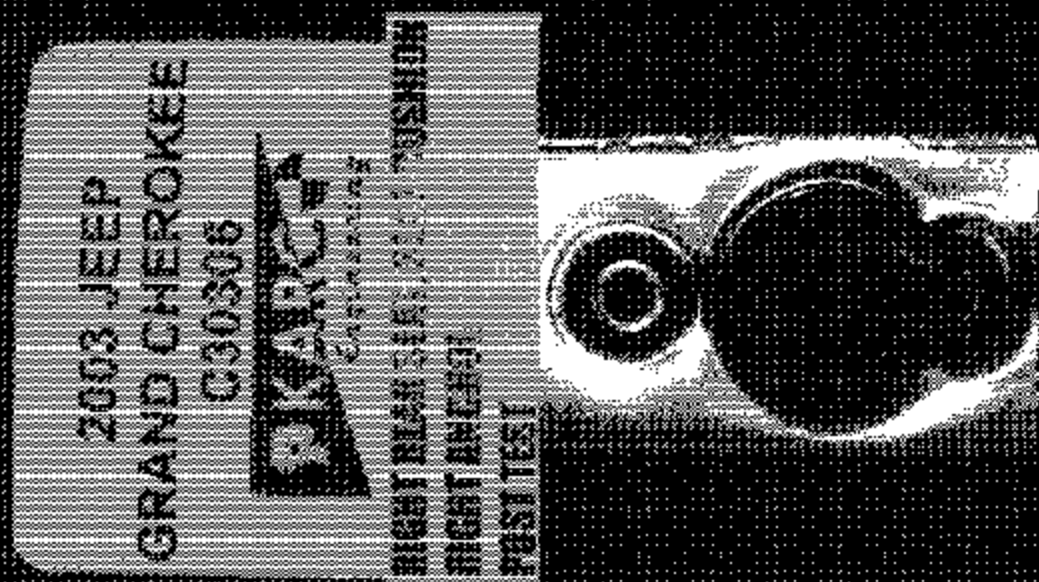


Figure A-106: Seat Anchor, Right Rear Seat, Seat Cushion, Post-Test

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RIGHT REAR SEAT, SEAT BACK
LEFT ANCHOR
PRETEST

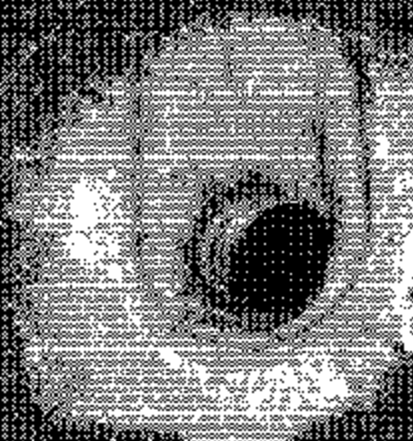
Figure A-107: Floor Pan Anchor, Right Rear Seat, Seat Back, Pre-Test

2003 JEEP
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C30306



RIGHT REAR SEAT, SEAT BACK
LEFT ANCHOR
POST TEST



1201
2031X
2470P
100 25 5

Figure A-108: Floor Pan Anchor, Right Rear Seat, Seat Back, Post-Test

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RIGHT REAR SEAT SEAT ANCHOR
LEFT ANCHOR
PRETEST

Figure A-109: Seat Anchor, Right Rear Seat, Seat Back, Pre-Test



Figure A-110: Seat Anchor, Right Rear Seat, Seat Back, Post-Test

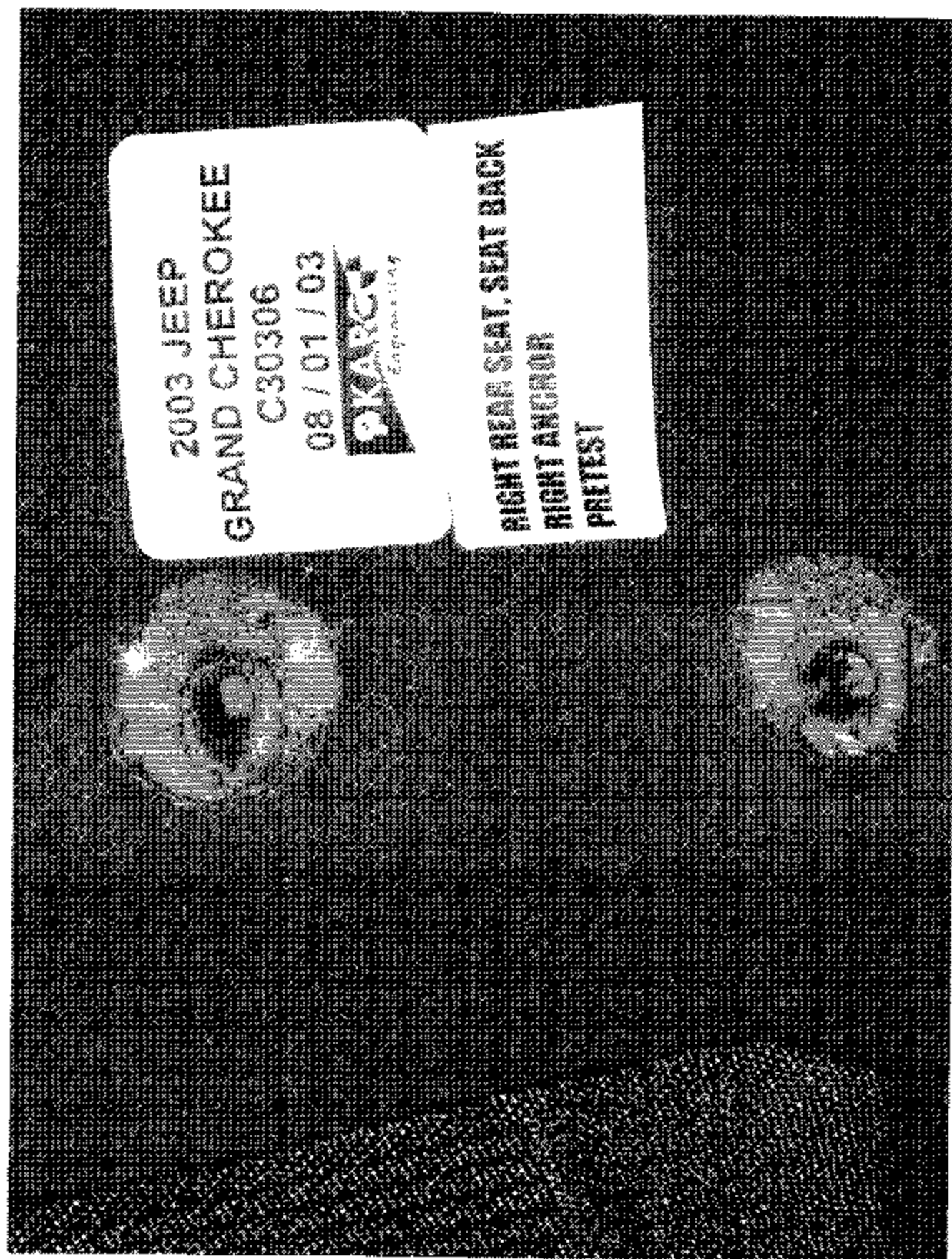


Figure A-111: Floor Pan Anchor, Right Rear Seat, Seat Back, Pre-Test

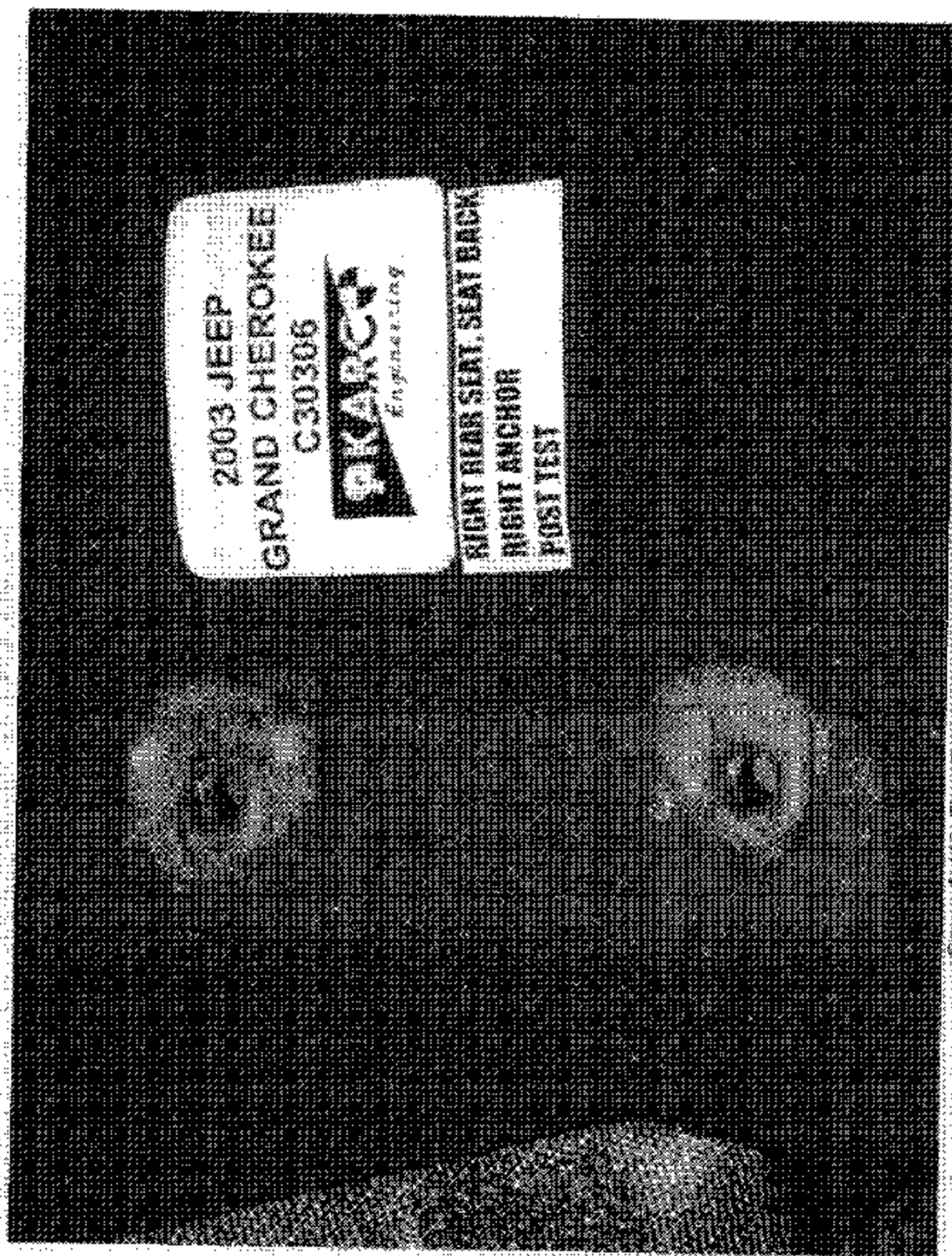


Figure A-112: Floor Pan Anchor, Right Rear Seat, Seat Back, Post-Test

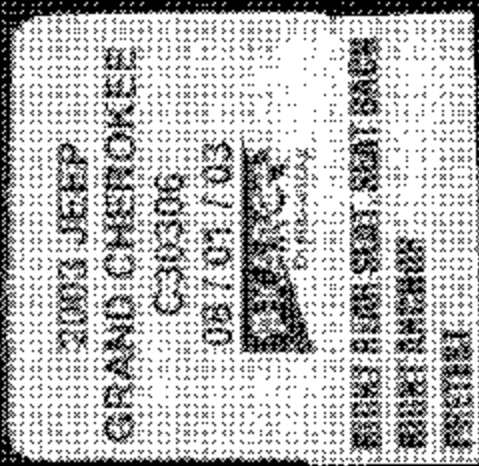


Figure A-113: Seat Anchor, Right Rear Seat, Seat Back, Pre-Test

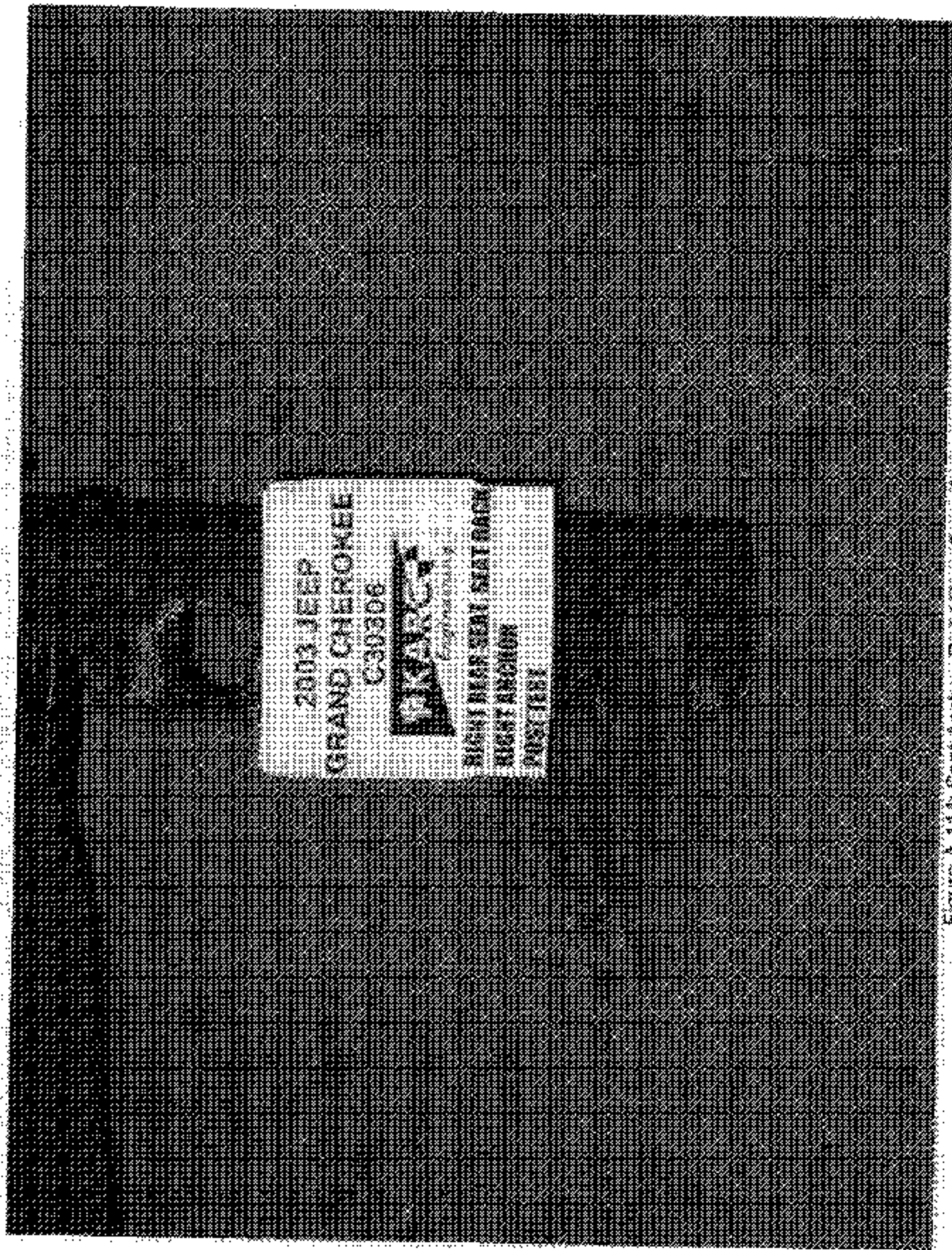
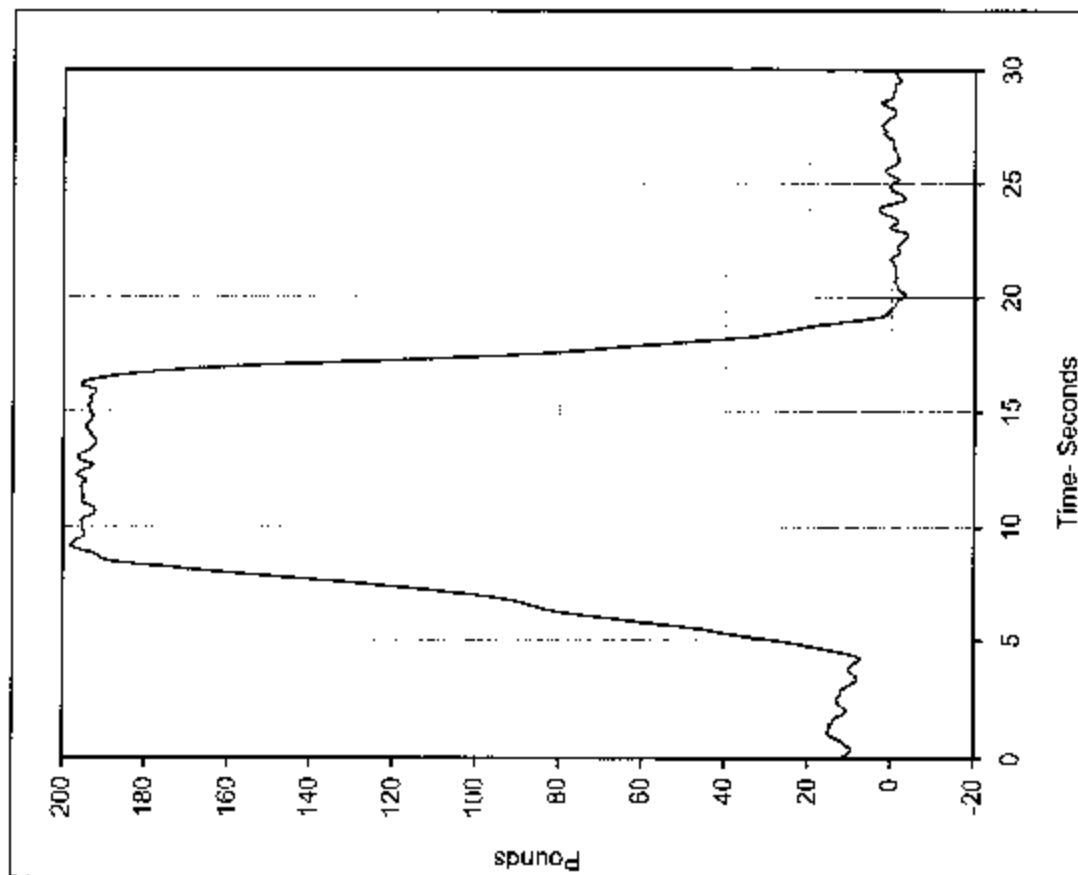


Figure A-114: Seat Anchor, Right Rear Seat, Seat Back, Post-Test

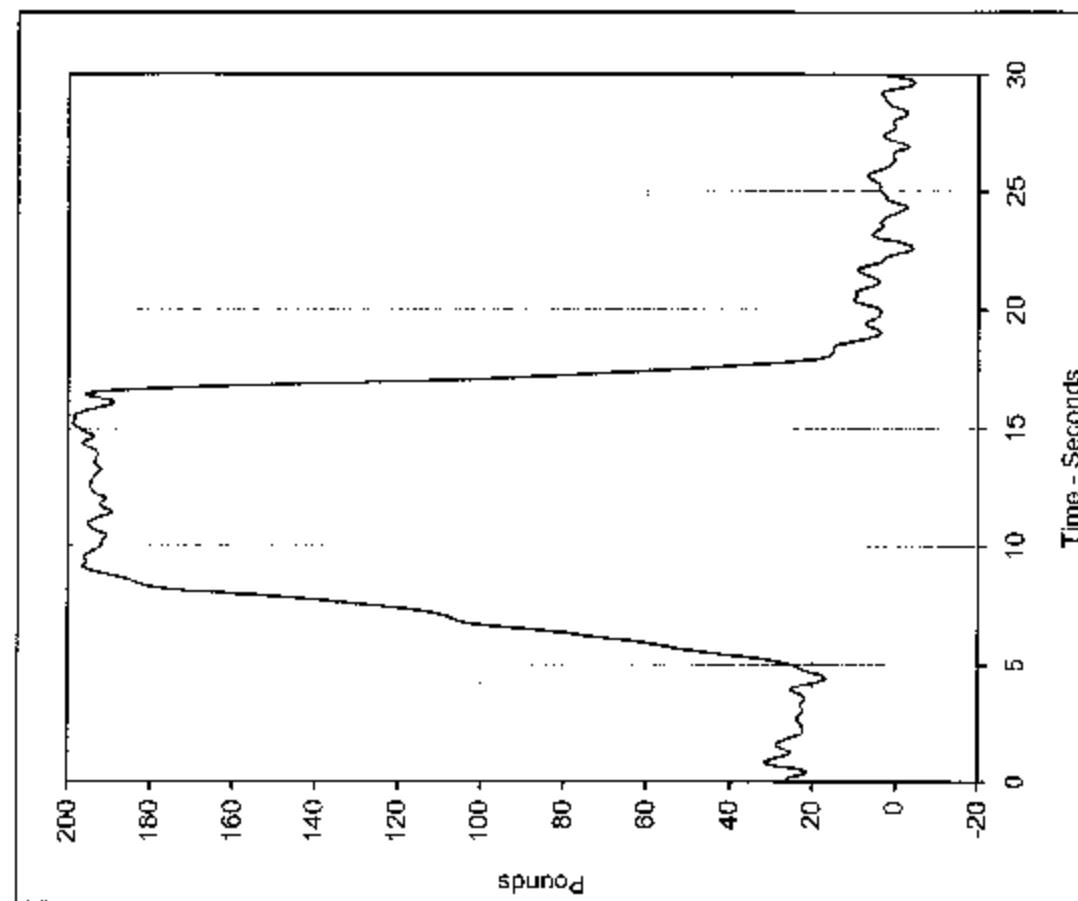
APPENDIX B
DATA PLOTS



Curve Description	CURNO	Type
Drvr, Upper X-Member	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	196.1	9.2	-3.7	22.7	1

Test Program: FMVSS 207 Air Moment (Front)
 Test Vehicle: 2003 Jeep Cherokee SUV

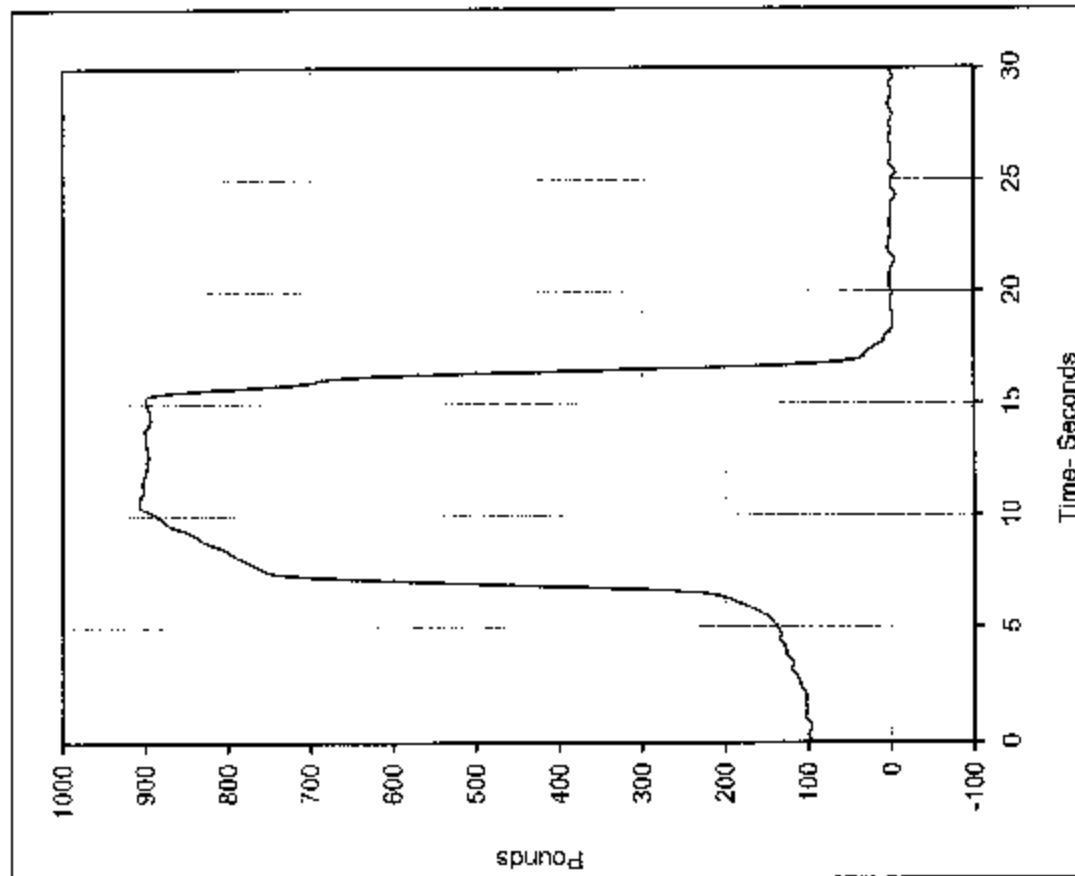


Curve Description	CURNO	Type
Pass, Upper X-Member	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	199.0	15.2	-4.3	29.7	1

Test Date: 7/31/03
 Project No.: C23030

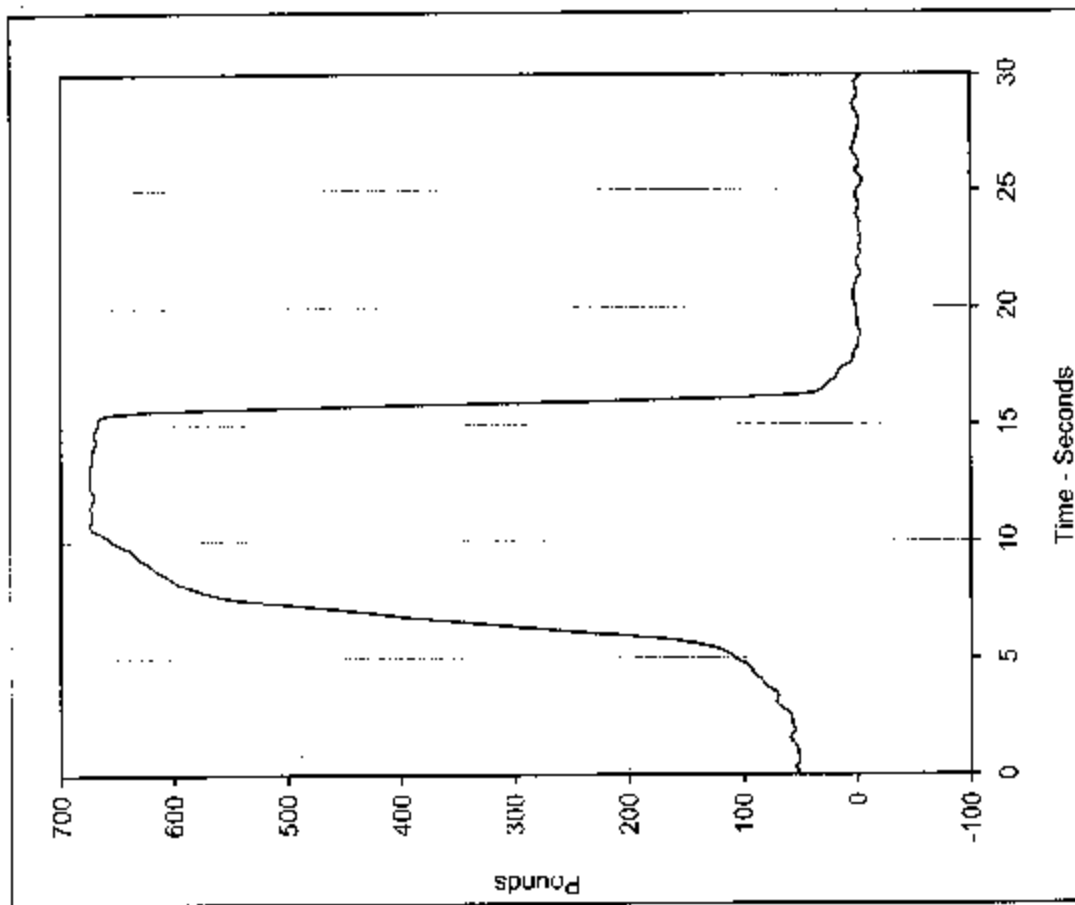




Curve Description	CURNO	Type
Driver Seat Frame	001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	907.2	10.5	-5.1	25.4	1

Test Program: FMVSS 207 Air Seat Frame and Adjusters (Front)
 Test Vehicle: 2003 Jeep Cherokee SUV

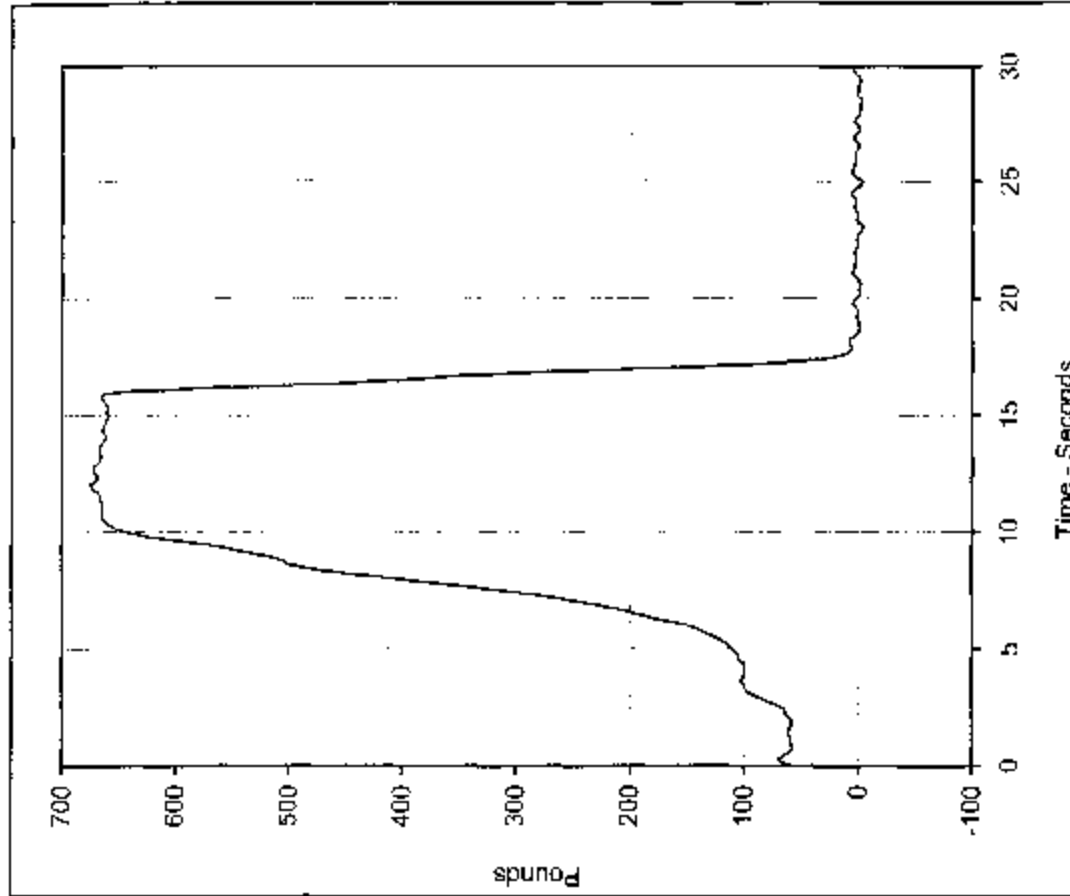
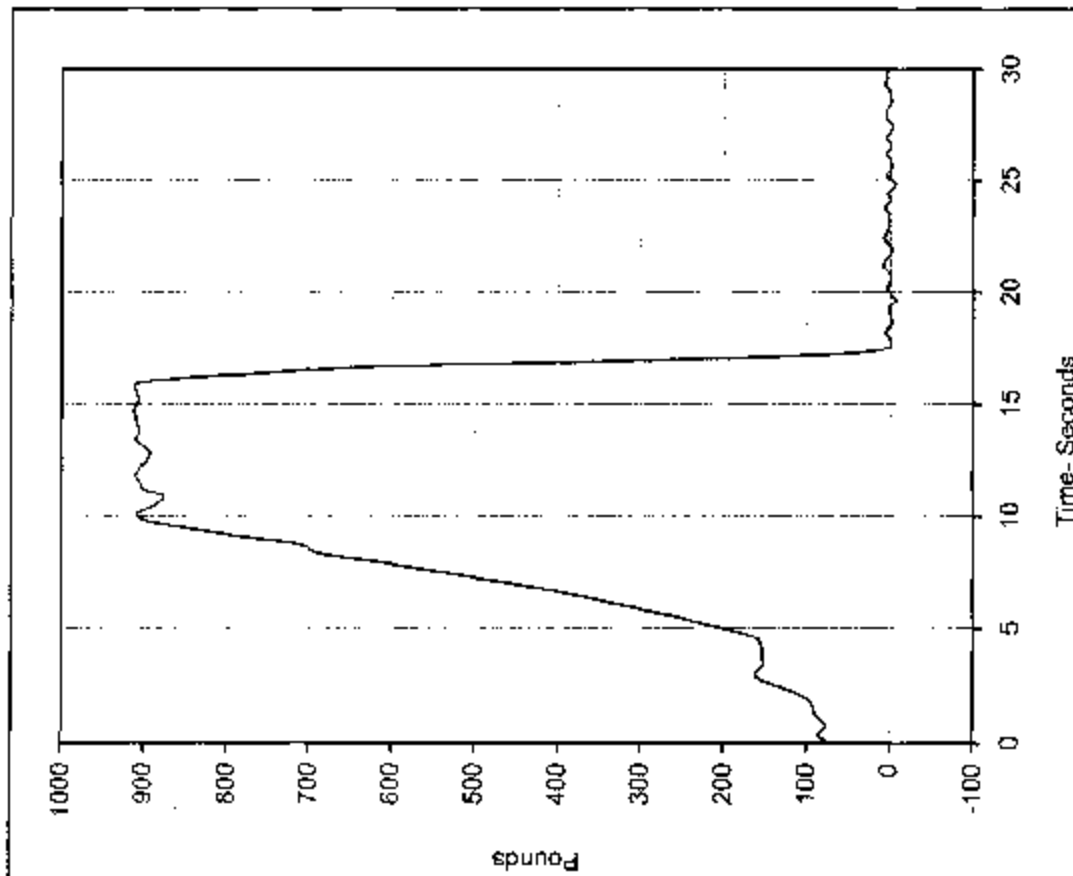


Curve Description	CURNO	Type
Pass. Seat Frame	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	675.5	13.1	-5.0	25.4	1

Test Date: 7/31/03
 Project No.: C23030



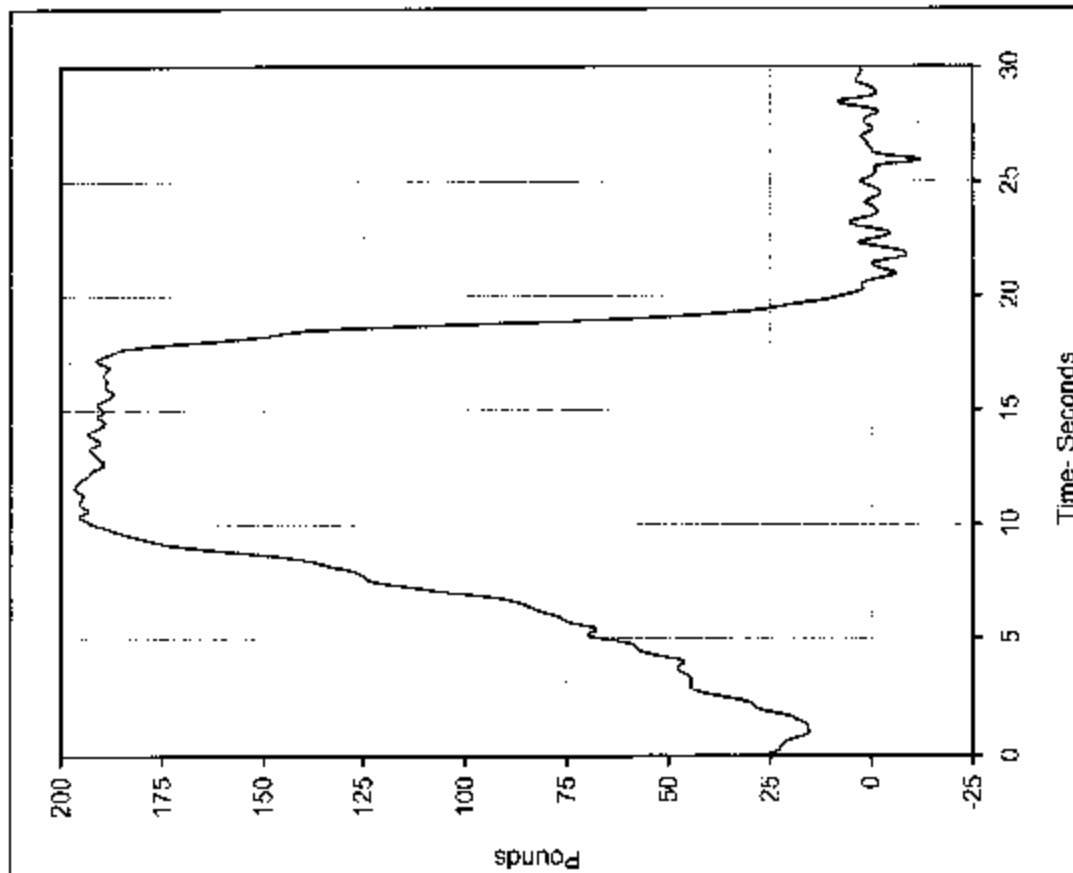


Test Date: 8/1/03

Project No.: C23030

Test Program: FMVSS 207 Forward Seat Frame and Adj. (Front)

Test Vehicle: 2003 Jeep Cherokee SUV



Curve Description	CURNO	Type
Left Rear Pass. Upper X-Member	001	FIL

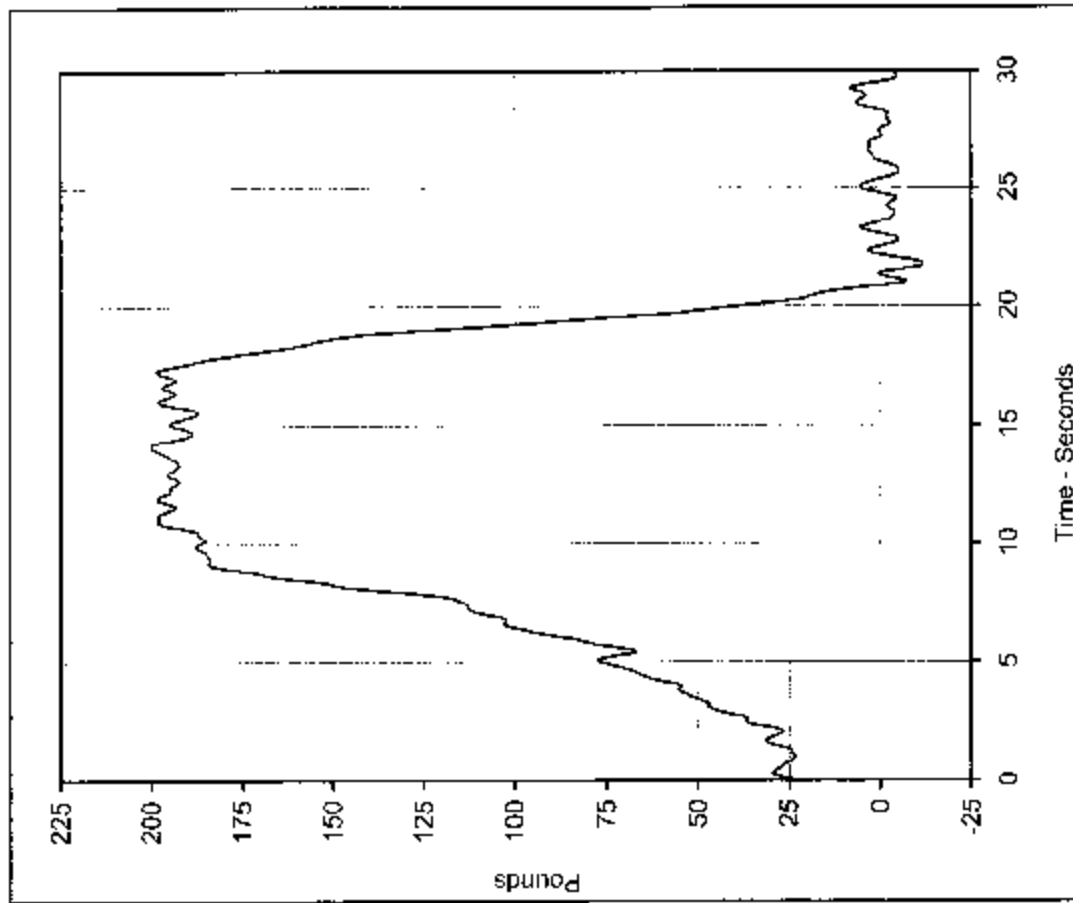
Units	Max	Time	Min	Time	Filter (Hz)
Pounds	196.8	11.6	-12.2	26.0	1

Test Program:

FMVSS 207 Alt Moment (Rear)

Test Vehicle:

2003 Jeep Cherokee SUV



Curve Description	CURNO	Type
Right Rear Pass. Upper X-Member	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	200.2	14.2	-11.8	21.8	1

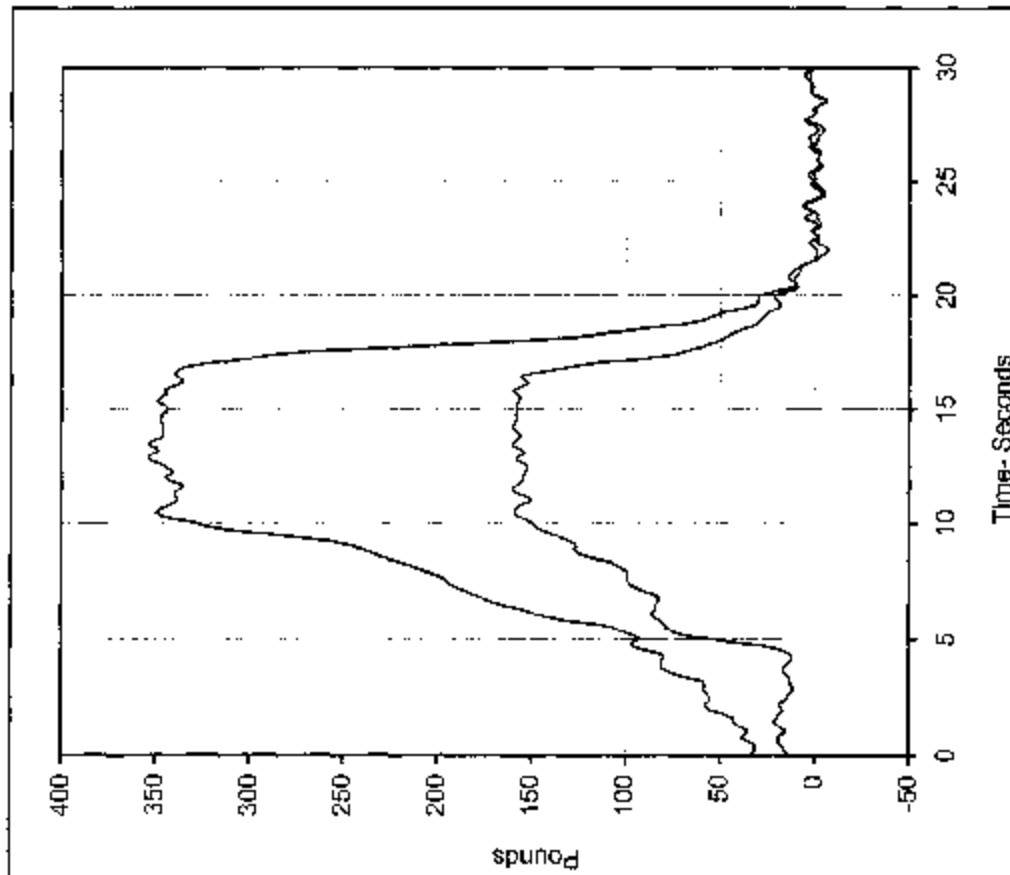
Test Date:

8/1/03

Project No.:

C23030

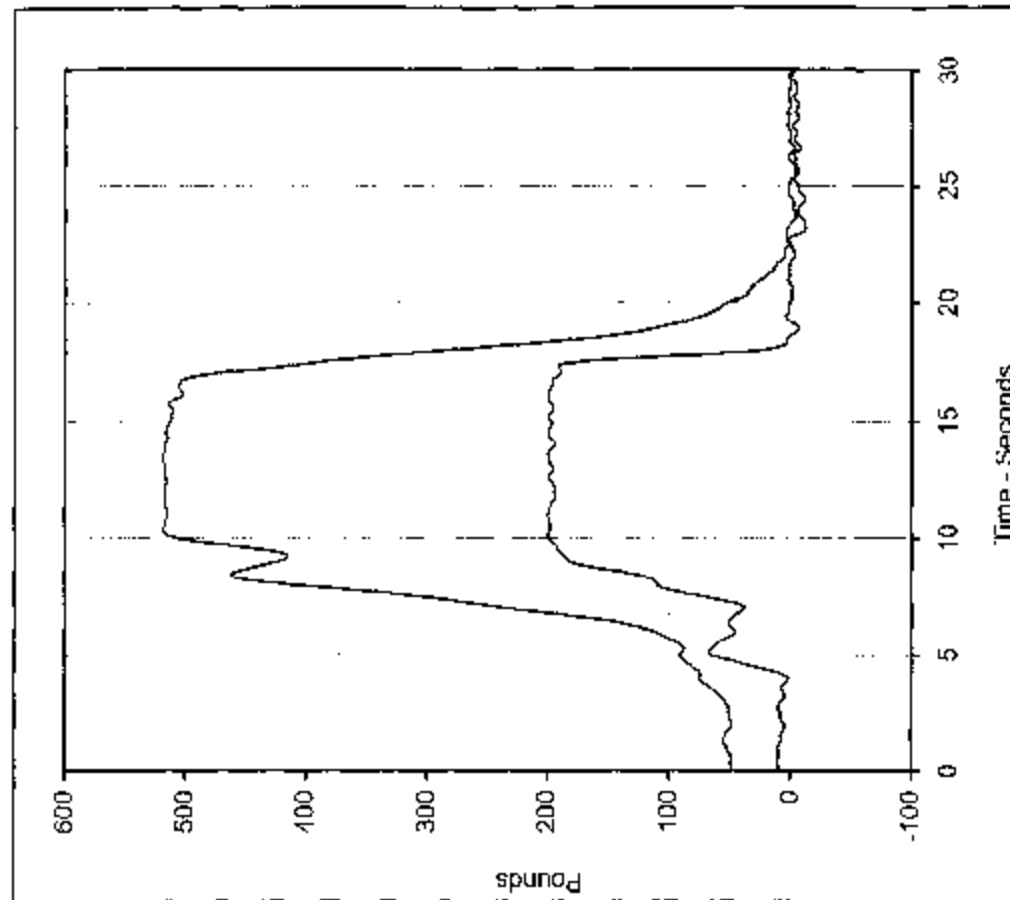




Curve Description	CURNO	Type
Left Rear Pass. Seat Back	001	FIL
Left Rear Pass. Seat Cushion	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	353.4	12.9	-6.8	22.0	1
Pounds	159.9	13.5	-6.0	28.6	1

Test Program: FMVSS 207 Aft Seat Back & Seat Cushions (Rear)
 Test Vehicle: 2003 Jeep Cherokee SUV

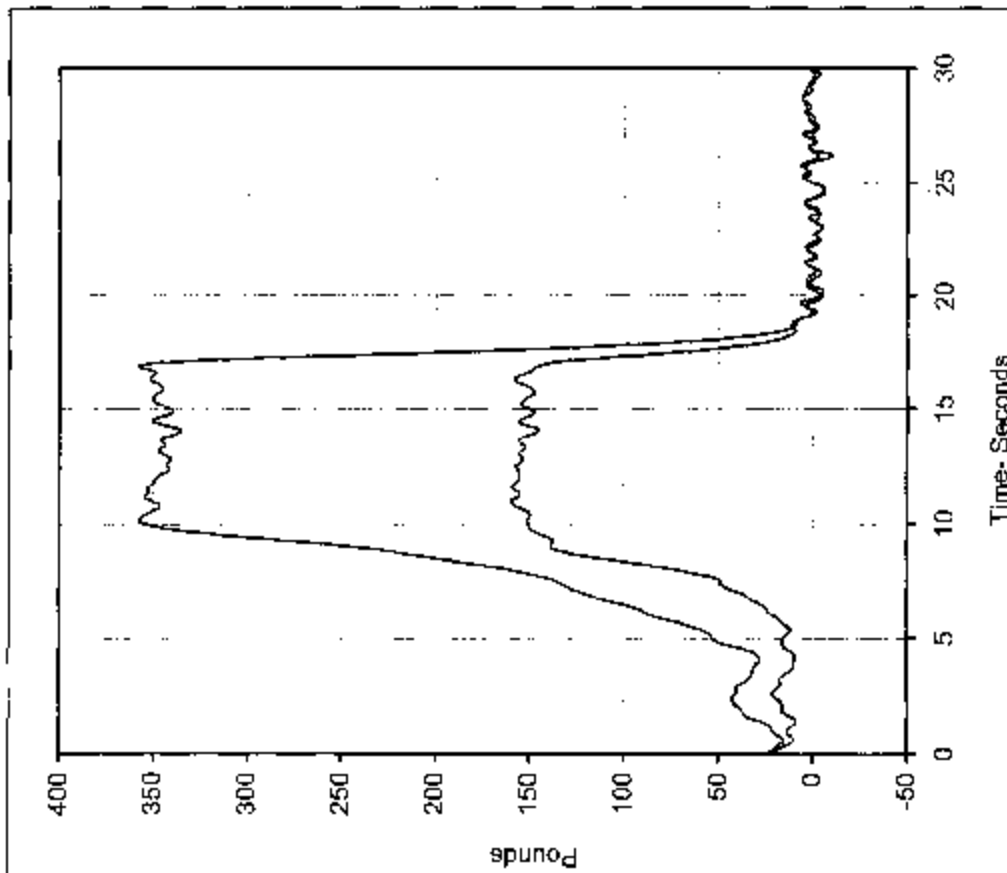


Curve Description	CURNO	Type
Right Rear Pass. Seat Back	003	FIL
Right Rear Pass. Seat Cushion	004	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	519.7	13.5	-12.4	23.2	1
Pounds	199.6	13.6	-6.4	19.0	1

Test Date: 8/1/03
 Project No.: C23030

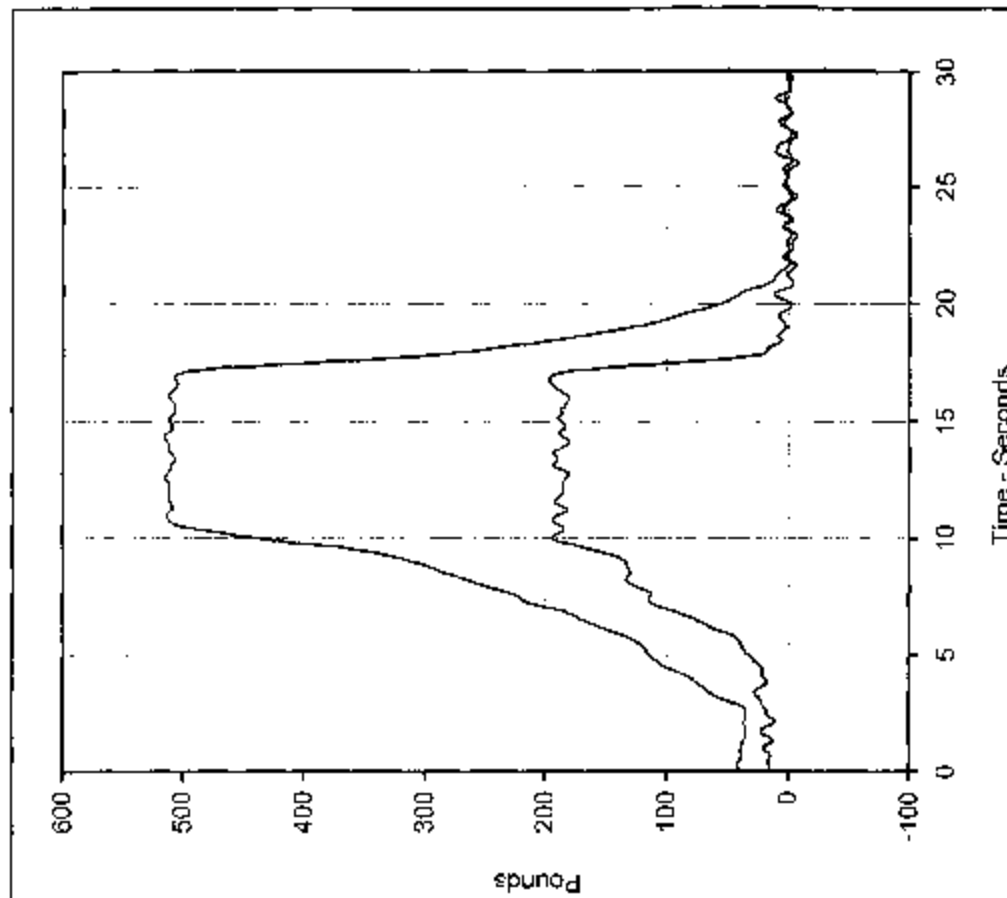




Curve Description	CURNO	Type
Left Rear Pass. Seat Back	001	FIL
Left Rear Pass. Seat Cushion	002	FIL

Units	Max	Time	Min	Filter (Hz)
Pounds	357.6	16.9	-9.7	1
Pounds	159.5	11.0	-6.1	1

Test Program: FMVSS 207 Fwd. Seat Back & Seat Cushions (Rear)
 Test Vehicle: 2003 Jeep Cherokee SUV



Curve Description	CURNO	Type
Right Rear Pass. Seat Back	003	FIL
Right Rear Pass. Seat Cushion	004	FIL

Units	Max	Time	Min	Filter (Hz)
Pounds	515.4	14.4	-3.7	1
Pounds	196.7	16.8	-7.6	1

Test Date: 8/4/03
 Project No.: C23030



APPENDIX C
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

FMVSS 207
Test Equipment List
7/31/03
2003 Jeep Cherokee SUV

Description	Manufacturer	Model No.	Serial No.	Limit	Accuracy	Cal. Date	Due Cal.
Hydraulic Pump	Lincoln	T-3825-C	2460952	8 gpm @ 2700 psi			
Computer	Panasonic	CF-71	81MAA01852	N/A	N/A	N/A	N/A
TDAS	DTS	TDAS	DM0103	N/A	SAE J211	11/15/02	11/15/03
Load Cell	Lebow	3132	622	500LB	± 1.0%	6/2/03	12/1/03
Load Cell	BLH	U3G1	49296	3K	± 1.0%	6/1/03	11/30/03
Load Cell	BLH	U-1C	N873	6K	± 1.0%	6/2/03	12/1/03
Load Cell	Alinco	342-E	22438-B	10K	± 1.0%	5/30/03	11/28/03

